1943-1973 HAWAII
TURTLE CATCH DATA
& MISC. DLNR - G.H. BALAZS
FILE

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all caps → POUNDS OF TURTLE FROM THE HAWAIIAN ISLANDS REPORTED AS BEING COMMERCIALLY CAPTURED BY VARIOUS FISHING METHODS, 1948-1973

YEAR	NET	GAFT	SCUBA	SPEAR	HAND	DIVE
1948	4,006(20.1%)			10(.1%)		
1949	9,919.5(63.2%)			60(.4%)		
1950	9,815.5(82.9%)					398(3.3%)
1951	1,317(25.6%)					
1952	1,516(55.5%)					
1953	3,990(42.2%)					
1954	979(32.2%)					
1955	7,252(65.2%)					
1956	2,696(38.9%)					
1957	265(38.1%)					
1958	130(4.1%)		360(11.2%)		286(8.9%)	457(14.3%)
1959	214(30%)					
1960					130(3.5%)	
1961					709(100%)	

YEAR	NOOSE	TRAP	HOOK AND LINE	TROLLING	HANDLINE	UNKNOWN	YEARLY TOTAL, LBS
1948			385(1.9%)		2997(15%)	12,535(62.9%)	19,933.0
1949						5,723(36.4%)	15,702.5
1950						1,631(13.8%)	11,844.5
1951						3,827(74.4%)	5,144.0
1952						1,215(44.5%)	2,731.0
1953						5,476(57.8%)	9,466.0
1954						2,061(67.8%)	3,040.0
1955						3,873(34.8%)	11,125.0
1956						4,229(61.1%)	6,925.0
1957						431(61.9%)	696.0
1958				167(5.2%)		1,807(56.3%)	3,207.0
1959						500(70%)	714.0
1960						3,609(96.5%)	3,739.0
1961							709.0

YEAR	NET	GAFT	SCUBA	SPEAR	HAND	DIVE
1962						
1963	224(58.9%)					
1964	70(4.3%)				730(45.4%)	
1965	80(5.3%)			1200(79.5%)		
1966	4,312(83.4%)			590(11.4%)		
1967	2,429(48.4%)			2585(51.6%)		
1968	2,980(88.9%)			120(3.6%)		
1969	6,795(66.8%)	500(4.9%)	1210(11.9%)		1456(14.3%)	
1970	10,117(80.9%)	930(7.4%)		540(4.3%)	419(3.4%)	
1971	6,105(30.7%)	10,130(50.9%)	750(3.8%)	1365(6.9%)	745(3.7%)	115(.6%)
1972	11,546(45.1%)	6,999(27.4%)	4300(16.8%)	254(1%)	34.5(.1%)	
1973	12,135(63.4%)	1,906(10%)	4588(24%)		60(.3%)	
↕ space						
1948–1973	98,893(49.5%)	20,465(10.2%)	11,208(5.6%)	6,724(3.4%)	4,569.5(2.3%)	970(.5%)

YEAR	NOOSE	TRAP	HOOK AND LINE	TROLLING	HANDLINE	UNKNOWN	YEARLY TOTAL, LBS
1962		477(100%)					477.0
1963		156(41.1%)					380.0
1964			100(6.2%)			709(44.1%)	1,609.0
1965						230(15.2%)	1,510.0
1966			20(.4%)			250(4.8%)	5,172.0
1967							5,014.0
1968						250(7.5%)	3,350.0
1969		214(2.1%)					10,175.0
1970						500(4%)	12,506.0
1971	355(1.8%)					319(1.6%)	19,884.0
1972						2,450(9.6%)	25,583.5
1973	400(2.1%)					42(.2%)	19,131.0
SPACE							
1948-1973	755(.3%)	847(.4%)	505(.3%)	167(.1%)	2997(1.5%)	5667(25.9%)	199,767.5

	1948	1949	1950	1951	1952	1953
HAWAII						
101						
102						
103						
105			1994(100.0)	269(100.0)		200(100.0)
107						
108						
121						
122						
126						
128						
Total			1994(16.8)	269(5.2)		200(2.1)
MAUI						
300		250(3.1)	100(56.2)		150(100.0)	
301	230(9.6)	325(4.0)		535(100.0)		
302	2166(90.4)	7398(92.1)				200(100.0)
303						
304		60(0.7)	78(43.8)			
320						
321						
322						
323						
Total	2396(12.0)	8033(51.2)	178(1.5)	535(10.5)	150(5.5)	200(2.1)

	1948	1949	1950	1951	1952	1953
LANAI						
308						
309	50(100.0)					
Total	50(0.3)					
MOLOKAI						
310		486(100.0)		12(100.0)		
311			500(35.7)		125(100.0)	1200(39.2)
312			902(64.3)			
313						
314						1864(60.8)
Total		486(3.1)	1402(11.8)	12(0.2)	125(4.6)	3064(32.4)
OAHU						
400	11774(75.1)	1075(17.4)	1046(15.2)	100(6.0)		
401	3226(20.6)	3634(58.8)	635(9.2)	125(7.5)	954(51.4)	
402		234(3.8)	73(1.1)	340(20.4)	400(21.6)	
403	500(3.2)		605(8.8)			
404		328(5.3)	209(3.0)	280(16.8)		3(0.1)
405						
406				125(7.5)		
407		568.5(9.2)	4043(58.5)	696(41.8)		3657(95.2)
408					237(12.8)	
409		344(5.6)	290(4.2)		265(14.3)	180(4.7)

	1948	1949	1950	1951	1952	1953
OAHU						
420	185(1.2)					
421						
428						
Total	15,685(78.7)	6183.5(39.4)	6901(58.3)	1666(32.4)	1856(67.9)	3840(40.6)
KAUAI						
500						
501						
503		1000(100.0)	200(100.0)		600(100.0)	1000(100.0)
504						
520						
521						
Total		1000(6.3)	200(1.7)		600(22.0)	1000(10.5)
NECKER ISLAND						
1139				1519(29.5)		
FRENCH FRIGATE SHOALS						
1239	422(2.1)		1169(9.9)	1143(22.2)		807(8.5)
GARDNER PINNACLES						
1539						355(3.8)

	1948	1949	1950	1951	1952	1953
PEARL & HERMES						
2119	1380(6.9)					
Yearly Total	19,933	15,702.5	11,844	5,144	2,731	9,466

	1954	1955	1956	1957	1958	1959
HAWAII						
101						
102						
103						186(100.0)
105	900(100.0)					
107						
108						
121						
122					167(100.0)	
126						
128						
Total	900(29.6)				167(5.2)	186(26.1)
MAUI						
300						
301					457(37.1)	
302	30(78.9)	449(59.9)	735(100.0)	355(100.0)	416(33.7)	500(100.0)
303						

	1954	1955	1956	1957	1958	1959
MAUI						
304						
320	8(21.1)				360(29.2)	
321		300(40.1)				
322						
323						
Total	38(1.3)	749(6.7)	735(10.6)	355(51.0)	1233(38.5)	500(70.0)
LANAI						
308						
309						
Total						
MOLOKAI						
310	582(28.3)	468(5.1)	905(18.5)			
311	487(23.7)					
312		700(7.6)				
313						
314	984(47.9)	8025(87.3)	4000(81.5)			
Total	2053(67.5)	9193(83.6)	4905(70.9)			

	1954	1955	1956	1957	1958	1959
OAHU						
400						28(100.0)
401		275(37.3)				
402		127(17.2)				
403						
404					10(100.0)	
405						
406						
407	49(100.0)	170(23.0)	90(10.8)			
408						
409		166(22.5)				
420						
421			728(87.4)			
428			15(1.8)			
Total	49(1.6)	738(6.7)	833 (12.0)		10(0.3)	28(3.9)
KAUAI						
500		223(50.1)	45(10.0)			
501		222(50.0)	297(65.7)			
503						
504			110(24.3)			
520						
521						
Total		445(4.0)	452(6.5)			

	1954	1955	1956	1957	1958	1959
FRENCH FRIGATE SHOALS						
1239				341(49.0)		
GARDNER PINNACLES						
1539					1797(56.0)	
Yearly Total	3,040	11,125	6,925	696	3,207	714

	1960	1961	1962	1963	1964
HAWAII					
101					
102					
103					100(100.0)
105					
107					
108					
121					
122					
126					
128					
Total					100(6.2)

	1960	1961	1962	1963	1964
MAUI					
300	824(39.8)	609(100.0)			
301	785(37.9)				
302	460(22.2)			224(100.0)	70(7.0)
303					
304					
320					200(20.0)
321					730(73.0)
322					
323					
Total	2069(55.3)	609(85.9)		224(58.9)	1000(62.2)
LANAI					
308					
309	1670(100.0)	100(100.0)			
Total	1670(44.7)	100(14.1)			
MOLOKAI					
310					
311					
312					
313					
314					
Total					

	1960	1961	1962	1963	1964
OAHU					
400					274(53.8)
401					235(46.2)
402					
403					
404					
405					
406					
407					
408					
409					
420			477(100.0)	156(100.0)	
421					
428					
Total			477(100.0)	156(41.1)	509(31.6)
KAUAI					
500					
501					
503					
504					
520					
521					
Total					
Yearly Total	3739	708	477	380	1609

	1965	1966	1967	1968	1969
HAWAII					
101					
102					
103		20(7.4)			
105				200(8.3)	
107		250(92.6)			
108				247(10.3)	
121				1482(61.6)	
122				250(10.4)	1200(70.6)
126				227(9.4)	
128					500(29.4)
Total		270(5.2)		2406(71.8)	1700(16.7)
MAUI					
300	120(100.0)	40(100.0)	535(94.9)		2266(29.5)
301					
302			29(5.1)		41(0.5)
303					
304					
320					2590(33.7)
321				824(100.0)	2780(36.2)
322					
323					
Total	120(8.0)	40(0.8)	564(11.2)	824(24.6)	7677(75.4)

	1965	1966	1967	1968	1969
LANAI					
308					
309		590(100.0)	2150(100.0)	120(100.0)	150(100.0)
Total		590(11.4)	2150(42.9)	120(3.6)	150(1.5)
MOLOKAI					
310	1080(100.0)	325(100.0)			
311					
312					
313					
314					150(100.0)
Total	1080(71.5)	325(6.3)			150(1.5)
OAHU					
400					
401					
402	80(25.8)				
403					
404		3400(86.1)	2300(100.0)		
405					
406					
407					134(26.9)
408					150(30.1)
409		90(2.3)			214(43.0)

	1965	1966	1967	1968	1969
OAHU					
420	230(74.2)				
421		457(11.6)			
428					
Total	310(20.5)	3947(76.3)	2300(45.9)		498(4.9)
KAUAI					
500					
501					
503					
504					
520					
521					
Total					
Yearly Total	1510	5172	5014	3350	10,175

	1970	1971	1972	1973	1974
HAWAII					
101		1900(90.3)			
102					
103					
105					
107					

	1970	1971	1972	1973	1974
HAWAII					
108					
121	68(100.0)	205(9.7)			
122					
126					
128					
Total	68(0.5)	2105(10.6)			
MAUI					
300	2300(22.9)	1950(13.8)	289.5(2.3)	1351(23.6)	1000(50.0)
301	600(6.0)				
302	2666(26.6)	7859(55.5)	8525(67.5)	3520(61.5)	
303	500(5.0)				
304					
305				400(7.0)	
320	1730(17.2)	2240(15.8)	1700(13.5)	450(7.9)	1000(50.0)
321	1250(12.5)	365(2.6)	400(3.2)		
322	540(5.4)	550(3.9)	900(7.1)		
323	450(4.5)	1200(8.5)	817(6.5)		
Total	10,036(80.3)	14,164(71.2)	12,631.5(49.2)	5721(29.9)	2000(98.1)
LANAI					
308		40(21.1)			
309		150(78.9)			
Total		190(0.9)			

	1970	1971	1972	1973	1974
MOLOKAI					
310				126(3.2)	
311				60(1.5)	
312				1598(40.0)	
313				1409(35.2)	
314		1680(100.0)	5067(100.0)	805(20.1)	
Total		1680(8.5)	5067(20.0)	3998(20.9)	
OAHU					
400					
401			400(5.2)	1566(17.4)	
402			2200(28.6)		
403		60(6.7)			
404	1304(83.0)	755(84.8)	1750(22.8)	286(3.2)	
405		75(8.4)			
406			1354(17.6)	3053(33.9)	
407	233(14.8)		1669(21.7)	3740(41.5)	
408	35(2.2)			42(0.5)	37(100)
409			312(4.1)	325(3.5)	
420					
421					
428					
Total	1572(12.6)	890(4.5)	7685(30.0)	9012(47.1)	37(1.9)

	1970	1971	1972	1973	1974
KAUAI					
500		500(58.5)			
501				400(100.0)	
503	800(96.4)				
504	30(3.6)	130(15.2)	200(100.0)		
520		100(11.7)			
521		125(14.6)			
Total	830(6.6)	855(4.3)	200(0.8)	400(2.1)	
Yearly Total	12,506	19,884	25,583	19,131	2037*

*1st 6 months only

HAWAII - 18 ports of landing

101 - South Point
110 - Kona Section
111 - Milolii
113 - Hookena
114 - Honaunau
115 - Keei, Napoopoo, Kealakekua
116 - Keeauhou, Kahaluu
117 - Kailua, Honokahau
133 - Kawaihae, Kohala, Kahakuloa
134 - Mahukona
142 - Honokaa
152 - Hilo, Waiakea, Papaikou
162 - Pahoa
171 - Kalapana, Puna, Pohoiki, Kapoho Pt.
172 - Kau Desert
181 - Punaluu
182 - Naalehu, Kaalualu
199 - Unknown

MAUI - 17 ports of landing

202 - Kanahena Pt.
211 - Makena, Keonioio
221 - Kihei
222 - Maalaea
230 - Lahaina
231 - Olowalu
232 - Mala Wharf, Kahana
233 - Kaanapali, Honokawai
261 - Honolua
262 - Waihee, Kahakuloa
271 - Kahului, Naska
272 - Specklesville
273 - Paia, Kuau
281 - Haiku, Maliko, Puwela
283 - Keanae, Peahi, Nahiku
284 - Hana
299 - Unknown

LANAI - 6 ports of landing

302 - Kaumalapau
322 - Awelua Beach
323 - Kahue Beach
325 - Keomoku Harbor
343 - Manele Beach
399 - Unknown

MOLOKAI - 12 ports of landing

411 - Palaau District
415 - Halawa
422 - Honouliwai
426 - Pukoo Harbor
427 - Kaluaaha
429 - Keawenui, Ohia
431 - Kamalo Harbor
452 - Kawela
453 - Kamaloloa
454 - Kaunakakai
461 - Kolo Harbor
499 - Unknown

OAHU - 27 ports of landing

501 - Koko Head, Maunaloa Bay
502 - Diamond Head, Ala Wai, Waikiki
511 - Kewalo Basin
512 - Honolulu Harbor, Sand Island
513 - Kalihi, Moanalua Bridge
522 - Aiea
523 - Pearl City, Waipahu, Waipio
524 - Honouliuli, Hoaeae
525 - Ewa
531 - Nanakuli
532 - Waianae, Pokai Bay
533 - Makua
540 - Waialua
542 - Haleiwa
543 - Waialee, Waimea Bay
561 - Kahuku
562 - Laie, Hauula, Punaluu
563 - Kahana Bay
570 - Kaneohe Bay
571 - Waikane
572 - Waiahole
573 - Heeia
574 - Kaneohe
575 - Kahaluu
581 - Kailua Bay
582 - Waimanalo
599 - Unknown

KAUAI - 17 ports of landing

601 - Koloa
602 - Kukuiula, Mahahuena Pt.
603 - Lawai
611 - Port Allen
612 - Hanapepe
613 - Makaweli
621 - Waimea
631 - Mana, Kekaha, Kikiola
661 - Haena
662 - Hanalei, Wainiha
663 - Kalihiwai, Moloaa
671 - Anahola, Anini
673 - Kapaa, Wailua
681 - Hanamalu
682 - Ahukini, Lihue
683 - Nawiliwili
699 - Unknown

CODE FOR PORT OF LANDING (pp. 21-23)

HAWAII - 18 ports of landing

101 - South Point
110 - Kona Section
111 - Hilo
113 - Hookena
114 - Honaunau
115 - Keei, Napoopoo, Kealakekua
116 - Keauhou, Kahaluu
117 - Kailua, Honokahau
132 - Kawaihae, Kohala, Kawaloa
134 - Mahukona
142 - Honokaa
152 - Hilo, Waiakea, Papaikou
162 - Pohoa
171 - Kalapana, Puna, Pohoiki, Kapoho Pt.
172 - Kau Desert
181 - Punaluu
182 - Naalehu, Kaalualu
199 - Unknown

MAUI - 17 ports of landing

202 - Kanahena Pt.
211 - Mikena, Keauhou
221 - Kihei
222 - Kealaea
230 - Lahaina
231 - Olowalu
232 - Mala Wharf, Kahana
233 - Kaanapali, Honokowai
261 - Honolua
262 - Wailuku, Kahului
271 - Kahului, Nuiki
272 - Spreckelsville
273 - Paia, Kuau
281 - Haiku, Maliko, Puuwela
283 - Keanae, Peahi, Nahiku
284 - Hana
299 - Unknown

LANAI - 6 ports of landing

302 - Kaumalapau
322 - Awelua Beach
323 - Kahue Beach
325 - Keomoku Harbor
343 - Manele Beach
399 - Unknown

MOLOKAI - 12 ports of landing

411 - PALAAU DISTRICT
415 - HALAWA
422 - HONOULIWAI
426 - PUKOO HARBOR
427 - KALUAAHA
429 - KEAWENUI, OHIA
431 - KAMALO HALPUL
452 - KAWELA
453 - KAMALOLOA
454 - KAUNAKAKAI
461 - KOLO HARBOR
499 - UNKNOWN

OAHU - 27 ports of landing

501 - KOKO HEAD, HALONALOA BAY
502 - DIAMOND HEAD, ALAWAI, WAIKIKI
511 - KEWALO BASIN
512 - HON. HARBOR, SAND ISLAND
513 - KALIHI, MOANALUA BRIDGE
522 - AIEA
523 - PEARL CITY, WAIPAHU, WAIPIO
524 - HONOULIULI, HOAEAE
525 - EWA
531 - NANAKULI
532 - WAIANAE, POKAI BAY
533 - MAKUA
540 - WAIALUA
542 - HALEIWA
543 - WAIALEE, WAIMEA BAY
561 - KAHUKU
562 - LAIE, HAUULA, PUNALUU
563 - KAHANA BAY
570 - KANEOHE BAY
571 - WAIKANE
572 - WAIAHOLE
573 - HEEIA
574 - KANEOHE
575 - KAHALUU
581 - KAILUA BAY
582 - WAIMANALO
599 - UNKNOWN

KAUAI - 17 ports of landing

601 - KOLOA

602 - KUKUIOLA, MAHAHUENA PT.

603 - LAWAI

611 - PORT ALLEN

612 - HANAPEPE

613 - MAKAWELI

621 - WAIMEA

631 - HANA, KEKAHA, KIKIOLA

661 - HAENA

662 - HANALEI, WAINIHA

663 - KALIHIWAI, MOLOLA

671 - ANAHOLA, ANINI

673 - KAPAA, WAILUA

681 - HANAMALU

682 - AHUKINI, LIHUE

683 - NAWILIWILI

699 - UNKNOWN

Note } Table continues on next page

~~METHODS~~ Methods ~~[illegible]~~

YEAR	NET	GAFT	SCUBA	SPEAR	HAND
1973	13,135 (63.4%)	1906 (10%)	4588 (24%)	2 turtles no weights	60 (.3%)
1972	11546 (45.1%)	6999 (27.4%)	4300 (16.8%)	254 (1%)	34.5 (.1%)
1971	6,105 (30.7%)	10,130 (50.9%)	750 (3.8%)	1365 (6.9%)	745 (3.7%)
1970	10,117 (80.9%)	930 (7.4%)		540 (4.3%)	419 (3.4%)
1969	6795 (66.8%)	500 (4.9%)	1210 (11.9%)		1456 (14.3%)
1968	2980 (88.9%)			120 (3.6%)	
1967	2429 (48.4%)			2585 (51.6%)	
1966	4312 (83.4%)			590 (11.4%)	
1965	80 (5.3%)			1200 (79.5%)	
1964	70 (4.3%)				730 (45.4%)
1963	224 (58.9%)				
1962					
1961					709 (100%)
1960					130 (3.5%)
1959	214 (30%)				
1958	130 (4.1%)		360 (11.2%)		286 (8.9%)
1957	265 (38.1%)				
1956	2696 (38.9%)				
1955	7252 (65.2%)				
1954	979 (32.2%)				
1953	3990 (42.2%)				
1952	1516 (55.5%)				
1951	1317 (25.6%)				
1950	9815.5 (82.9%)				
1949	9919.5 (63.2%)			60 (.4%)	
1948	4006 (20.1%)			10 (.1%)	

Hook and line

DIVE	NOOSE	TRAP	HOOK & LINE	TROLLING	HANDLINE	UNKNOWN
	400 (2.1%)					42 (.2%)
						2450 (9.6%)
115 (.6%)	355 (1.8%)					319 (1.6%)
						500 (4%)
		214 (2.1%)				
						250 (7.5%)
			20 (.4%)			250 (4.8%)
						230 (15.2%)
			100 (6.2%)			709 (44.1%)
		156 (41.1%)				
		477 (100%)				
						3609 (96.5%)
						500 (70%)
457 (14.3%)				167 (5.2%)		1807 (56.3%)
						431 (61.9%)
						4229 (61.1%)
						3873 (34.8%)
						2061 (67.8%)
						5476 (57.8%)
						1215 (44.5%)
						3827 (74.4%)
398 (3.3%)						1631 (13.8%)
						5723 (36.4%)
			385 (1.9%)		2997 (15%)	12535 (62.9%)

Pounds Caught by Areas of Islands 1948-1953

	1948	1949	1950	1951	1952	1953
HAWAII						
101						
102						
103						
105						
107			1994(100%)	269(100%)		200(100%)
108						
121						
122						
126						
128						
Total			1994 (16.8%)	269(5.2%)		200(2.1%)
MAUI						
300		250(3.1)	100(56.2)			
301	230(9.6)	325(4.0)		535(100%)	150(100%)	
302	2166(90.4)	7398(92.1)				
303						200(100%)
304		60(0.7)	78(43.8)			
320						
321						
322						
323						
Total	2396(12%)	8033(51.2%)	178(1.5)	535(10.5%)	150(5.5%)	200(2.1%)

For final copy: 1) leave out all asterisks and % signs 2) use 1½ spacing between area numbers 3) make sure all columns are straight and centered under year 4) at end of one page of years, if there is room, start in on next group to make one extension table

Pounds Caught by Areas of Islands 1948-1953

	1948	1949	1950	1951	1952	1953
LANAI						
308						
309	50(100%)					
Total	50(0.3%)					
MOLOKAI						
310		486*(100%)		12(100%)		
311			500*(35.7)		125(100%)	1200*(39.2%)
312			902 (64.3)			
313						
314						1864*(60.8%)
Total		486*(3.1%)	1402*(11.8)	12(0.2%)	125(4.6%)	3064*(32.4%)
OAHU						
400	11774*(75.1%)	1075(17.4%)	1046(15.2)	100(6%)		
401	3226(20.6%)	3634*(58.8%)	635(9.2)	125(7.5%)	954(51.4%)	
402		234*(3.8%)	73(1.1)	340(20.4%)	400(21.6%)	
403	500(3.2%)		605(8.8)			
404		328(5.3%)	209(3%)	280(16.8%)		3*(0.1%)
405						
406				125(7.5%)		
407		568.5(9.2%)	4043*(58.5)	696(41.8%)		3657*(95.2%)
408					237(12.8%)	
409		344*(5.6%)	290(4.2%)		265(14.3%)	180(4.7%)
420	185(1.2%)					
421						
428						
Total	15,685*(78.7%)	6183.5*(39.4%)	6901*(58.3)	1666(32.4%)	1856(67.9%)	3840*(40.6%)

Pounds Caught by Areas of Islands 1948-1953

	1948	1949	1950	1951	1952	1953
KAUAI						
500						
501						
503		1000(100%)	200(100%)		600(100%)	1000*(100%)
504						
520						
521						
Total		1000(6.3%)	200(1.7%)		600(22%)	1000*(10.5%)
NECKER ISLAND						
1139				1519(29.5)		
FRENCH FRIGATE SHOALS						
1239	422(2.1)		1169(9.9)	1143(22.2)		807(8.5)
GARDNER PINNACLES						
1539						355(3.8)
PEARL & HERMES						
2119	1380(6.9)					
Yearly Total	19,933	15,702.5	11,849	5,149	2731	9466

Pounds Caught by Areas of Islands 1954-1959

	1954	1955	1956	1957	1958	1959
HAWAII						
101						
102						
103						
105	900(100%)					186(100%)
107						
108						
121						
122						
126					167(100%)	
128						
Total	900(29.6%)				167(5.2%)	186(26.1%)
MAUI						
300						
301						
302	30(78.9%)	449*(59.9%)	735(100%)	355(100%)	457(37.1%)	
303					416(33.7%)	500(100%)
304						
320	8(21.1%)					
321		300(40.1%)			360(29.2%)	
322						
323						
Total	38(1.3%)	749*(6.7%)	735(10.6)	355(51%)	1233(38.5%)	500(70%)

Pounds Caught by Areas of Islands 1954-1959

	1954	1955	1956	1957	1958	1959
LANAI						
308						
309						
MOLOKAI						
310	582*(28.3%)	468(5.1%)	905(18.5)			
311	487*(23.7%)					
312		700*(7.6%)				
313						
314	984*(47.9%)	8025*(87.3%)	4000*(81.5)			
Total	2053*(67.5%)	9193*(82.6%)	4905*(70.9)			
OAHU						
400						
401		275(37.3%)				28(100.0)
402		127(17.2%)				
403						
404						
405					10(100.0)	
406						
407	49(100.0)	170(23.0)	90(10.8)			
408						
409		166(22.5%)				
420						
421			728(87.4)			
428			15(1.8)			
Total	49(1.6%)	738(6.7%)	833(12%)		10(.3%)	28(3.9%)

Pounds Caught by Areas of Islands 1954-1959

	1954	1955	1956	1957	1958	1959
KAUAI						
500		223(50.1%)	45(10.0)			
501		222(50%)	297(65.7)			
503						
504			110(24.3)			
520						
521						
Total		445(4%.0)	452(6.5)			
FRENCH FRIGATE SHOALS						
1239				341(49.0)		
GARDNER PINNACLES						
1539					1797(56.0)	
Yearly Total	3040	11,125	6925	696	3207	714

Rounds Caught by Areas of Islands 1960-1964

	1960	1961	1962	1963	1964
HAWAII					
101					
102					
103					
105					100(100%)
107					
108					
121					
122					
126					
128					
Total					100(6.2%)
MAUI					
300	824(39.8%)	609(100%)			
301	785(37.9%)				
302	460(22.2%)				
303				224(100%)	70(7%)
304					
320					
321					200(20%)
322					730(73%)
323					
Total	2069(55.3%)	609(85.9%)		224(58.9%)	1000(62.2%)

Pounds Caught by Areas of Islands 1960-1964

	1960	1961	1962	1963	1964
LANAI					
308					
309	1670(100%)	100(100%)			
Total	1670(44.7%)	100(14.1%)			
MOLOKAI					
310					
311					
312					
313					
314					
OAHU					
400					
401					274(53.8%)
402					235(46.2%)
403					
404					
405					
406					
407					
408					
409					
420			477(100)	156(100%)	
421					
428					
Total			477(100)	156(41.1%)	509(31.6%)

Pounds Caught by Areas of Islands 1960-1964

	1960	1961	1962	1963	1964
KAUAI					
500					
501					
503					
504					
520					
521					
Total	3739	708	477	380	1609

Pounds Caught by Areas of Islands 1965-1969

	19 65	19 66	19 67	19 68	19 69
HAWAII					
101					
102					
103		20(7.4%)			
105				200(8.3)	
107		250(92.6%)			
108				247(10.3)	
121				1482(61.6)	
122				250(10.4)	1200(70.6%)
126				227(9.4)	
128					500(29.4%)
Total		270(5.2%)		2406(71.8)	1700(16.7%)
MAUI					
300	120(100%)	40(100%)	535(94.9%)		2266(29.5%)
301					
302			29(5.1%)		410.5%)
303					
304					
320					2590(33.7%)
321				824(100%)	2780(36.2%)
322					
323					
Total	120(8%)	40(1.8%)	564(11.2%)	824(24.6%)	7677(75.4%)

Pounds Caught by Areas of Islands 1965-1969

	19 65	19 66	19 67	19 68	19 69
LANAI					
308					
309		590(100%)	2150(100%)	120(100)	150(100%)
Total		590(11.4%)	2150(42.9%)	120(3.6)	150(1.5%)
MOLOKAI					
310	1080(100%)	325(100%)			
311					
312					
313					
314					150(100%)
Total	1080(71.5%)	325(6.3%)			150(1.5%)
OAHU					
400					
401					
402	80(25.8)				
403					
404		3400(86.1%)	2300(100%)		
405					
406					
407					134(26.9%)
408					150(30.1%)
409		90(2.3%)			214(43%)
420	230(74.2%)				
421		457(11.6%)			
428					
Total	310(20.5%)	3947(76.3%)	2300(45.9%)		498(4.9%)

Pounds Caught by Areas of Islands 1965-1969

	19 65	19 66	19 67	19 68	19 69
KAUAI					
500					
501					
503					
504					
520					
521					
Total					
Yearly Total	1210	5170	5012	3350	10,175

Pounds Caught by Areas of Islands 1970-1974

	19 70	19 71	19 72	19 73	19 74
HAWAII					
101		1900(90.3%)			
102					
103					
105					
107					
108					
121	68(100%)	205(9.7%)			
122					
126					
128					
Total	68(0.5%)	2105(10.6%)			
MAUI					
300	2300(22.9%)	1950(13.8%)	2895(2.3%)	1351(23.6%)	1000 (50.0)
301	600(6%)				
302	2666(26.6%)	7859(55.5%)	8525(67.5%)	3520(61.5%)	
303	500(5%)				
304					
305				400(7%)	
320	1730(17.2%)	2240(15.8%)	1700(13.5%)	450(7.9%)	1000 (50.0)
321	1250(12.5%)	365(2.6%)	400(3.2%)		
322	540(5.4%)	550(3.9%)	900(7.1%)		
323	450(4.5%)	1200(8.5%)	817(6.5%)		
Total	10,036(80.3%)	14,164(71.2%)	12,631.5(49.2%)	5721(29.9%)	2000 (98.1)

Pounds Caught by Areas of Islands 1970-1974

	1970	1971	1972	1973	1974
LANAI					
308		40(21.1%)			
309		150(Set Free) (78.9%)			
Total		190(1.9%)			
MOLOKAI					
310				126(3.2%)	
311				60(1.5%)	
312				1598(40%)	
313				1409(35.2%)	
314		1680(100%)	5067(100%)	805(20.1%)	
Total		1680(8.5%)	5067(20%)	3998(20.9%)	
OAHU					
400					
401			400(5.2%)	1566(17.4%)	
402			2200(28.6%)		
403		60(6.7%)			
404	1304(83%)	755(84.8%)	1750(22.8%)	286(3.2%)	
405		75(8.4%)			
406			1354(17.6%)	3053(33.9%)	
407	233(14.8%)		1669(21.7%)	3740(41.5%)	
408	35(2.2%)			42(0.5%)	37(100)
409			312(4.1%)	325(3.5%)	
420					
421					
428					
Total	1572(12.6%)	890(4.5%)	7685(30%)	9012(47.1%)	37(49)

Pounds Caught by Areas of Islands 1970-1974

	19 70	19 71	19 72	19 73	19 74
KAUAI					
500		500(58.5%)			
501				400(100%)	
503	800(96.4%)				
504	30(3.6%)	130(15.2%)	200(100%)		
520		100(11.7%)			
521		125(14.6%)			
Total	830(6.6%)	855(4.3%)	200(.8%)	400(2.1%)	
Yearly Total	12,506	19,884	25,583	19131	2037 *

* 1st 6 months only

DIVISION OF CONSERVATION AND RESOURCES ENFORCEMENT

The Division of Conservation and Resources Enforcement is charged with the responsibility of preserving and conserving Hawaii's land and natural resources through education and enforcement of laws, rules and regulations.

The 1978 Legislature through Act 171 established a Conservation and Resources Enforcement Program within the Department of Land and Natural Resources. The subsequent reorganization was approved by the Governor on January 5, 1979. Prior to Act 171, the various operating divisions of the department of Land and Natural Resources enforced the laws and regulations affecting their programs. The provisions of Act 171 placed the enforcement functions of the various divisions within a single division. This division exercises enforcement responsibilities of the department's rules and regulations which implements Title 12, Hawaii Revised Statutes, relating to conservation and resources.

Staffing

The enforcement program is allocated 51 positions. Twelve (12) and thirty-nine (39) positions were transferred from the Divisions of Forestry and Fish and Game, respectively. The director, investigator III and six (6) enforcement officers positions are currently vacant, however, recruitment procedures are under way and these vacancies are expected to be filled by January 1980.

Review and Recodification of Laws, Rules and Regulations

The Division received a grant from the Coastal Zone Management Program of the Department of Planning and Economic Development to review and recodify the laws, rules and regulations of the Department. The desire is to streamline and condense the rules, regulations and laws to provide easier understanding for both the public and the enforcement effort. The work is being undertaken by the Attorney General's Office in coordination with affected divisions of the Department of Land and Natural Resources.

Hunter Safety Training

Pursuant to Section 191-71, HRS, establishing a Hunter Safety Training Program, the Division hired a Hunter Safety Coordinator in November, 1978. Since then the Coordinator has been developing a program that will include the use of volunteer instructors on each island who will train groups of hunters. Special emphasis is being placed on the training of younger hunters in the areas of safety, hunter ethics and survival skills.

In-Service Training

Division officers have undergone in-service training in firearms and the application of the Penal Code. New revolvers and equipment for the officers were purchased and issued. Officers have been encourage to take training courses offered by the Department of Personnel Services.

Planned Projects

The Division has received several grants from the Coastal Zone Management Program of DPED for information and education, in-service training of officers, and recruitment and training of volunteer officers. These programs will go into operation during fiscal 1979-80. The Division will also be seeking an Investigator and a Training and Research Officer. Further plans for fiscal year 1979-80 include upgrading of communications and equipment.

Air guns and rifles seized as evidence in hunting case.

New responsibilities of DOCARE include response to violations of parks rules. This is a photo taken of illegal burning at Sand Island.

DIVISION OF CONSERVATION AND RESOURCES ENFORCEMENT

TABLE 1--Licenses and Permits Issued

Licenses and Permits	Number
Commercial fishing license	2,755
Freshwater fishing license	132
Hunting license	702
Duplicate Hunting/Freshwater licenses	112
Marine Animal - Lobster; Kona Crab	169
Game Bird Farm	30
Aquarium Fish Pemrit	118
Watershed Permit (Forestry)	29
Turtle Permit	46
Permits (Fishing, Hunting & Entry)	437
TOTAL	4,530

TABLE 2--Field Activities

Activity	Number
Mileage by vehicle	383,691 Mi.
Mileage by foot	4,028 Mi.
Mileage by boat	177 Mi.
Swimming	½ Mi.
Stakeouts	742 Mi.
Stakeout Hours	170 Hr.
Horseback	12 Mi.

Table 3--Field Contacts Made

Field Contact	Actual	Visual
Commercial fishermen	4,493	4,457
Marine sport fishermen	38,758	51,950
Freshwater fishermen	9,179	4,275
Hunters	9,940	3,504
Fish & Wildlife Resource Users	11,538	45,926
State Park Users	3,765	78,629
Forestry Users	585	613
TOTAL	78,258	189,354

TABLE 4--Inspections Made

Types of Inspection	Number
Commercial fishing crafts	1,794
Sport fishing crafts	3,571
Fish markets	7,502
Fish peddlers	635
License agents	395
Aquarium fish facility	98
State Parks	1,147
Forest Reserves	312
Camping permits	225
Forestry permits	9
Tea houses/Restaurants	51
TOTAL	15,739

TABLE 5--Public Information

Types of Information	Number
Talks made to groups	11
Printed informational material	2,887
Letters answered	12
News releases	14
TOTAL	2,924

TABLE 6--Complaints and Investigations

Types of Complaints & Information	Number	Hours
Fishing	136	490.5
Hunting	72	286.5
Forestry	9	57.0
State Parks	9	58.0
DLNR Regulation No. 4	21	115.0
NARS Regulation No. 7	2	4.0
Miscellaneous	33	143.0
TOTAL	282	1,154.0

DIVISION OF CONSERVATION AND RESOURCES ENFORCEMENT

TABLE 7--Citations and Arrests

TYPE OF VIOLATION	NUMBER
Fishing	
No commercial fishing license	2
Unlawful fishing in fish refuge	3
Unlawful possession/fishing fine mesh thrownet	22
Unlawful possession/fishing small mesh net	12
Exceeding Nehu bag limit	2
Restricted netting of Hahalalu	1
Taking Iao without a permit	2
Unlawful possession of Samoan Crab under six (6) inches	1
Fishing without freshwater fishing license	38
Possession/taking lobster closed season	4
Unlawful snagging of fish in Wahiawa PFA	5
Possession/taking lobster with eggs	5
Size limit on Tucunare	1
Netting in restricted areas (Kapalama Canal)	1
Exceeding bag limit (Tucunare)	3
Possession/taking Lobster with spear	4
Fishing in closed fish management area (Waikiki-Diamond Head)	6
Taking undersize Octopus	4
Destruction of Coral in MLCD (Manele-Hulopoe)	1
Possession/Taking undersize Lobster	1
Taking Turtle without permit	2
Sale of speared fish	1
Sale of undersize Opihi	2
Illegal taking of Hinana	1
Unlawful fishing in Molokini Shoal MLCD	1
Unlawful possession sea mullet during closed season	17
Total Fishing Violations	142
Hunting	
Hunting without a license	19
Unlawful possession firearm in closed area	7
Prohibited hunting in GMA	3
No hunting license on person (failure to display)	5
Rifle hunting in archery area	3
No hunting without permit	10
No entry permit	7
Failure to sign in/out at checking station	4
Loaded firearm in vehicle	1
No orange garment	1
Hunting Mouflon out of season	1
Hunting of Goats without tags	4

TABLE 7 (continued)

TYPE OF VIOLATION	NUMBER
Hunting (continued)	
Hunting in restricted area	2
Loaded firearm in hunting safety zone	1
Possession firearm in safety zone	2
Discharging firearm in safety zone	1
Possession firearm in GMA without permit	1
Hunting Goats without permit	1
Unlawful hunting at night	6
Unlawful hunting closed area	1
Unlawful possession game mammal in GMA	1
Unlawful hunting in safety zone	6
Unlawful possession firearm in archery area	6
Total Hunting Violations	93
Natural Area Reserves	
Unlawful removal animal marine life (Ahihi-Kinau)	2
Illegal parking (Ahihi-Kinau)	1
Total Natural Area Reserves Violations	3
Firearms	
Place to keep	6
Loaded firearm in vehicle	1
Total Firearms Violations	7
State Parks	
Camping without permit	9
Unlawful use of vehicle in State Park	1
Nudity in State Park	1
Solicitation in State Park without permit	1
Parking violations	707
Total State Parks Violations	719
Forestry	
Unlawful use of vehicle on Forestry foot trail	1
Unlawful cutting of plant life	1
Total Forestry Violations	2

TABLE 7 (continued)

TYPE OF VIOLATION	NUMBER
Miscellaneous	
Failure to submit monthly fish catch report	8
Trapping wild birds	1
Detaining stolen property	1
Unlawful landing on Mokulua Island without permit	5
Unlawful camping on Mokulua Island	2
Unlawful landing on Manana Island	2
Harvesting Coral for commercial use within 1,000 feet seaward in water 30 or less feet in length	2
Failure to submit Fish Dealer's Report	2
Unlawful fishing in wildlife sanctuary (Paiko Lagoon)	1
Total Miscellaneous Violations	24

TABLE 8--Management Activities

Management Activities	Hours
Fisheries	423
Wildlife	45
State Parks	4
Forestry	7
TOTAL	479

DIVISION OF FISH AND GAME

The Division of Fish and Game administers the State's fish and wildlife programs in commercial fisheries, fish and wildlife protection and enhancement and inland-ocean based recreation. It is concerned with the research, development and management of the State's fisheries and wildlife resources. The task of discharging this responsibility was carried out by the Division's 87 permanent employees in the fisheries and wildlife branches and an administrative unit aided by the fine support of personnel elsewhere in the Department.

Major emphasis was placed during the year in the improvement of quality outdoor recreational opportunities through establishment of the Lapakahi Marine Life Conservation District and other fishing regulations; in operating public fishing and hunting areas and stocking them with game species; in the enhancement of the commercial fishery by initiating the preparation of a Master Plan for Hawaiian fisheries development; in the development of prawn and channel catfish industries by improving aquaculture techniques; in the restoration of the Alala (Hawaiian Crow) at Pohakuloa; and in the improvement of axis deer and mouflon hunting on Lanai. Special attention was also given to marine resource assessment-surveys in the Northwestern Hawaiian Islands and other areas in the main Hawaiian Islands.

Major programs of the Division and accomplishments therein for Fiscal Year 1978-79 are presented as follows:

ECONOMIC DEVELOPMENT PROGRAM

The activities under this program are directed toward assisiting commercial fishery enterprises by increasing productivity through improvements in production methods, product processing, equipment usage and management methods, and developing new and improved aquaculture products by providing technical assistance and demonstration projects so as to enhance the quality and diversification of Hawaii's commercial fishery production. Management oriented biological studies and analysis of commercial fishermen catch reports are conducted to gather information about commercially important fish and shellfish species to determine the effects of fishing so that appropriate laws and regulations may be adopted to manage and protect the resources.

Master Plan on Hawaiian Fisheries Development

The ninth Legislature of the State of Hawaii appropriated $150,000 under the Special Program Appropriations for FY 1978-79 (Act 243, SLH 1978) for the Department to formulate a **"Master Plan on Hawaiian Fisheries Development"** for Hawaii's commercial fisheries. An interim report of the Plan was prepared and presented to the Tenth Legislature in February, 1979. As basic components of the Plan the following three projects were initiated:

1. **Midway Island Albacore Tuna Development Project**

   As a result of considerable coordination and cooperation between the State, U. S. Navy and private industry, the U.S. Navy granted a "Use Permit" to the State of allow certain commercial fishemen the use of Midway Island harbor as a base for a tender vessel to support a fleet of trollers fishing for albacore tuna in the waters North and West of Midway during the spring and summer of 1979. Bumble Bee Seafoods was selected as the primary contractor to provide the tender vessel and troller fleet for the project.

   Initial catches of albacore tuna landed at Midway island harbor have exceeded our expectation to date and indicates a tremendous expansion potential for the albacore tuna fishery. In order to further pursue the potential of this fishery, the State will be re-negotiating the "Use Permit" with the U.S. Navy to cover the spring and summer period of the 1980 albacore tuna fishing season north of Midway Island.

2. **Statewide Fish Aggregation System**

   Preparations are underway for the placement of 26 fish aggregating devices in waters throughout the main Hawaiian Islands in FY 1979-80 with the basic purpose of improving the high seas commercial and recreational fishing opportunities. The merits of this concept are based on the experimental fish aggregation buoy system installed by the U.S. National Marine Fisheries Service which demonstrated a substantial increase in fish caught and time saved in searching for fish schools by fishermen fishing around the buoys. The number and location of buoys to be installed will be determined by the financial constraints of the project and upon input received through public meetings with fishermen scheduled for July, 1979.

3. **Leeward Islands Commercial Fishing Surveys**

   To evaluate the potential for developing a commercial fishery in the Leeward Islands, commercial fishing vessels will be chartered to conduct intensive exploratory fishing operations for shrimp, crabs and bottom-fishes at selected sites in the Leeward Hawaiian Islands. The first year's survey of this two-year project is scheduled for FY 1979-80, and preparations are being made to implement the project.

Management of Pink Coral and Gold Coral

Pursuant to Division of Fish and Game Regulation 41 - Relating to the Management of Pink Coral and Gold Coral which became effective on September 23, 1977, the State has been managing the pink and gold precious coral species at the Makapuu Bed on Oahu. Measures of the regulation include a quota on the harvest of pink coral to assure a sustainable yield, prohibition on the use of non-selective harvesting gear such as drag nets, dredges and trawls, and a permit system to monitor the fishing of pink and gold corals to assure judicious management of these resources. Pink coral harvests for the period beginning July 1, 1977 and ending June 30, 1979 was approximately 4,000 pounds, well within the sustainable yield quota of 4,400 pounds established for this period.

Oceanic Institute Fish Hatchery

Under terms of an agreement between the State and Oceanic Institute that was executed last year, construction

of a fish hatchery at the Oceanic Institute, Makapuu Point, Oahu is nearing completion. When completed in August, 1979 the hatchery will provide prototype facilities for future large-scale fish hatchery operations in the State. The facility will emphasize research on aquaculture species and development of mass production techniques essential for expanding and diversifying Hawaii's aquaculture industry. Both the Department and the Institute will use the facility, which will also serve as a training center for hatchery technicians.

To provide an adequate supply of salt water and insure security for the hatchery and other facilities at the Institute, the State will also be constructing a saltwater well and the paving and fencing of the Institute's research facilities. Construction of the well, paving and fencing is expected to be completed in November, 1979.

Mullet and other fish species produced by the new hatchery will enable the State to assist commercial farm pond stocking, revive the mullet culture industry, replenish and increase the marine resources in State waters for recreational and commercial fishermen, and develop suitable baitfish for the aku fishery.

Legislation Affecting Commercial Fishery Operations

Act 19, SLH 1979 amended Section 189-1 of the Hawaii Revised Statutes (HRS) to include seaweed within the definition of "fish" thereby requiring a State commercial fishing license and monthly catch report submittals for commercial harvesting of seaweed. Further, Act 229, SLH 1979 amended Section 188-25, HRS legalizing the sale of speared finfish that meet the minimum size for sale for a period of five-years (until December 31, 1983) after which only speared u'u, uhu and kumu will be allowed for sale. It is anticipated that during the five-year period, commercial spearfishermen will provide more species of fish demanded by the consumer public that are difficult to catch by hook and line or net fishing methods.

Spiny Lobster Management

Division of Fish and Game Regulation 22 on managing spiny lobsters was amended in August, 1978, basically to change the former minimum harvestable size of one-pound to a comparable size of 3¼ inch in carapace length. The change from a weight measurement to a length measurement was adopted because the length measurement is more practicable for use by recreational and commercial fishermen as well as for enforcement purposes. In order to make the Hawaii Revised Statutes consistent with Regulation 22, Section 188-40 which, among other things required that spiny lobsters be not less than a pound for sale, was amended pursuant to Act 123, SLH 1979, so as to retain the one-pound minimum size only for slipper lobsters and leaving spiny lobsters to be regulated separately under Regulation 22.

Opihi Management

Based on scientific studies conducted by the University of Hawaii on the biology of the opihi, the Board of Land and Natural Resources adopted Regulation 49, in August 1978 setting a minimum harvestable size for opihi of 1¼ inch in shell diameter and/or a minimum saleable size of one-half inch in meat diameter. According to information provided by the studies, the minimum harvestable size of 1¼ inch in shell diameter allows the opihi to attain sexual maturity before being subjected to harvesting.

Aquaculture

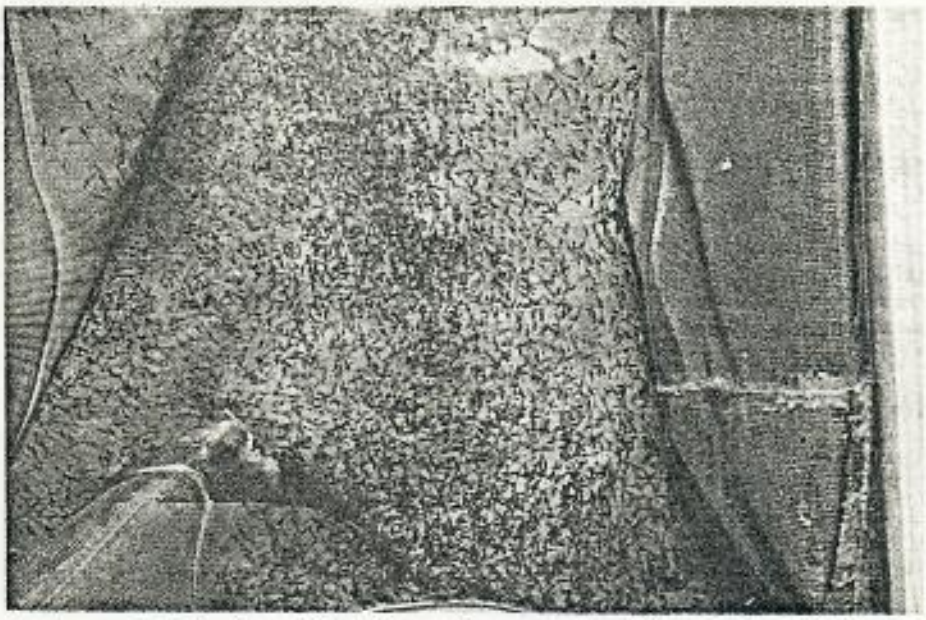
Prawn aquaculture research and development at the Anuenue Fisheries Research Center (AFRC) was continued during the year with nearly 4.5 million juvenile prawns produced and stocked in 92 acres of prawn farm ponds. Farm raised freshwater prawn produced for the market in FY 1978-79 yielded approximately 153,000 pounds for an estimated primary producer value $574,000.

To continue supporting an increased number of prawn farmers with juvenile prawns, it was evident that the Center's output for producing juvenile prawns needed to be increased. Thus, after finalization of a hatchery design and awarding of a construction contract accomplished last year, actual construction of a thermo-regulated prawn hatchery was initiated with an estimated completion date of July, 1979. When fully operational, the facility will increase the Center's juvenile prawn output capability from 8 million to 25-30 million juveniles per year which, in terms of prawn pond stocking capability, means a corresponding increase from servicing 120 acres of prawn ponds to more than 400 acres.

In addition to initiating construction on the hatchery, a water analysis laboratory was completed at the Center in April, 1979 adding immeasureably to the capability of ongoing prawn research and development work.

Also, in cooperation and coordination with other State agencies involved with prawn aquaculture development, the AFRC is continuing its efforts to improve existing prawn culturing and pond management techniques, develop efficient and economical prawn processing the marketing methods, and improve existing prawn brood stock genetically.

Prawn aquaculture research and development projects at the Anuenue Fisheries Research Center are continuing to improve the prawn aquaculture industry by developing efficient processing and marketing methods.



The Anuenue Fisheries Research Center's aquaculture program reared nearly 4.5 million juvenile prawns and stocked 92 acres of Hawaiian prawn farm ponds during FY 1978-79.

ENVIRONMENTAL PROTECTION PROGRAM

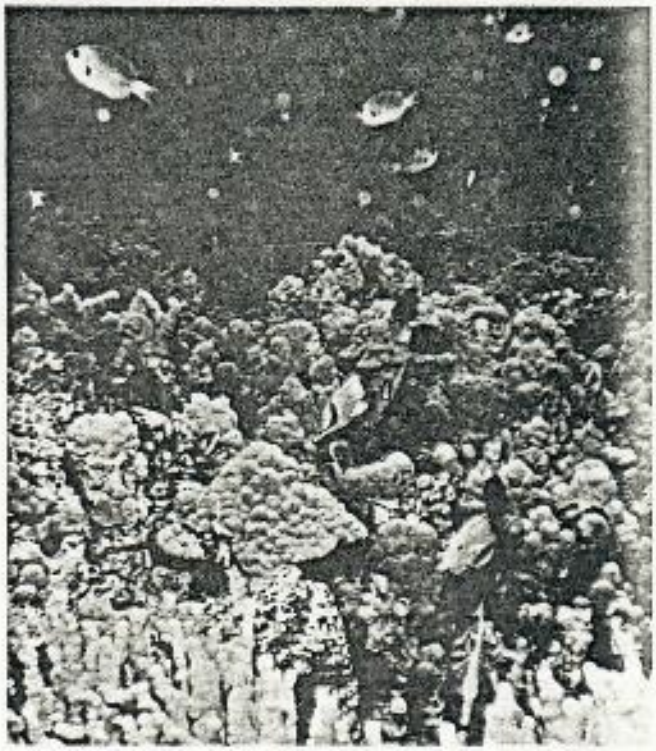
The objectives of this program are to preserve and enhance endangered and other firsh and wildlife species and their habitats through active protection, propagation and other management measures including monitoring of the resources, establishing sanctuaries, and evaluating proposed projects that may affect the resources or their habitats.

Marine Life Conservation Districts (MLCD)

Division of Fish and Game Regulation 51 established 146 acres of submerged lands on Hawaii as the Lapakahi Marine Life Conservation District in February, 1979 to preserve and protect the unique marine features and resources and historical setting of the adjacent Lapakahi State Historical Park located onshore. The Park encompasses the Koaie Hamlet, an ancient Hawaiian fishing village along the shoreline of Koaie Cove in the North Kohala District on the island of Hawaii. The impressive underwater features particularly in the Koaie Cove area well justifies the establishment of the Lapahaki MLCD.

In addition, marine surveys were conducted to monitor the Hanauma Bay MLCD on Oahu and to collect baseline information for a potential MLCD area at Moanui Beach, Molokai. At Hanauma Bay, two fish counting transects resulted in the enumeration of some 4,000 individual fishes represented by 68 species. Significant species incuded the 'ama'ama, manini, uouoa, palani, maiko, aholehole, uhu uliuli and another unidentified uhu, weke 'a'a and nenue contributing to 85 percent of the standing crop and 94 percent of the number of individual fishes counted.

On April 28, 1979, a fish counting survey was conducted at Moanui Beach on the eastern coastline of Molokai. The shoreline at Moanui Beach is comprised of a sand beach approximately 1,500 feet in length and bounded by remnants of two Hawaiian fishponds. A shallow fringing reef (0 to 3 feet water depth) extending from the beach to about 500 feet offshore characterizes the area. Some 1,400 individual fishes represented by 56 species were counted over the reef flat. Significant species included the kala, manini, hinalea lau-wili, two species of damselfish and uhu uliuli. Collectively, these six species of fishes accounted for 64 percent of the number of fishes counted and 79 percent of the estimated standing crop.

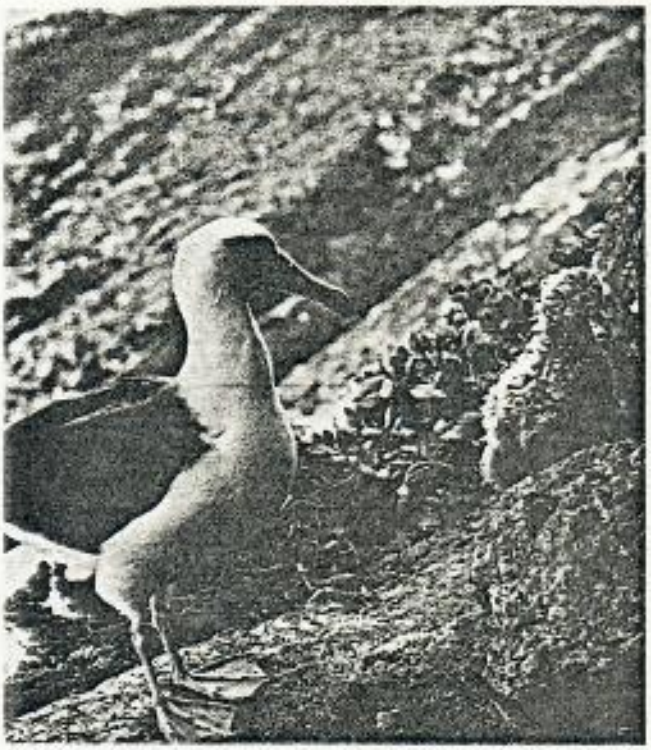


The Lapakahi Marine Life Conservation District in North Kohala, Hawaii, established in February 1979, is characterized by luxuriant coral growth, abundance of colorful reef fishes, and calm, clear waters.

Aquarium Fish Collecting Study

Monitoring the activities of aquarium fish collectors who use fine-mesh nets under a permit system were continued through data collected from monthly aquarium fish catch reports. The study revealed that a total of 292 permits were issued during FY 1978-79 of which 188 (65%) were for non-commercial, and 104 (35%) were for commercial purposes. There were 263 permits issued on Oahu, 20 on Hawaii, 7 on Maui, 3 on Molokai, and none on either Kauai or Lanai. Evaluation of the monthly catch reports show that a total of 161,486 marine fishes and other organisms were collected, of which 2,027 (1%) were for non-commercial use, and 159,459 (99%) were for commercial purposes. The largest number of marine aquarium organisms (114,743) were colleted off Oahu, followed by Hawaii (46,730), Maui (11), and Kauai, Molokai, and Lanai (combined, 2). The study also showed that 112,892 organisms were collected for comercial use off Oahu of which 107,985 (96%) were sold at a value of $185,074.16. The second largest commercial activity occurred off Hawaii where 46,567 organisms were collected and 46,287 (99.7%) valued at $65,935.00 were sold. There were no commercial aquarium fish collecting activities on the islands of Maui, Kauai, Molokai and Lanai.

Act 154, SLH 1979 amended Section 188-31 of the Hawaii Revised Statutes such that any person whose aquarium fish permit is cancelled by the Board of Land and Natural Resources for any infraction of the terms of the permit shall not be re-issued a permit for a period of two-years following the cancellation.

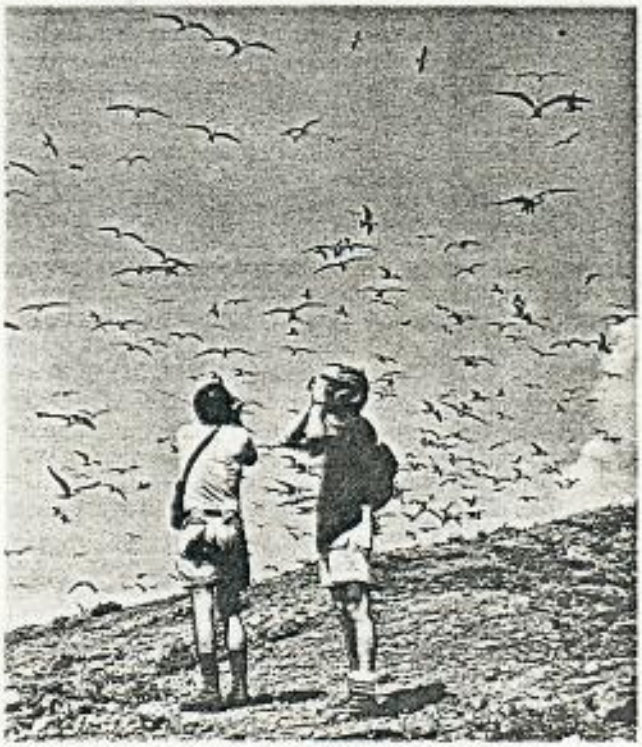


A Laysan albatross and chick on the Island of Ka'ula. The Department assisted the U.S. Navy in a survey of seabirds in March, 1979.

Environmental Impact Evaluations

Comments were prepared on evaluations of 281 proposals relative to Conservation District Use Applications, U.S. Army Corps of Engineers Public Notices, State Land Disposition, Draft and Final Enviromental Assessments and Enviromental Impact Statements, animal importation permits, scientific collecting permits, and other projects that have potential impact upon the State's fish and wildlife resources and habitats. Activities associated with the evaluations include on-site visits, extensive literature research, and contact with knowledgeable persons on the subject areas and resources.

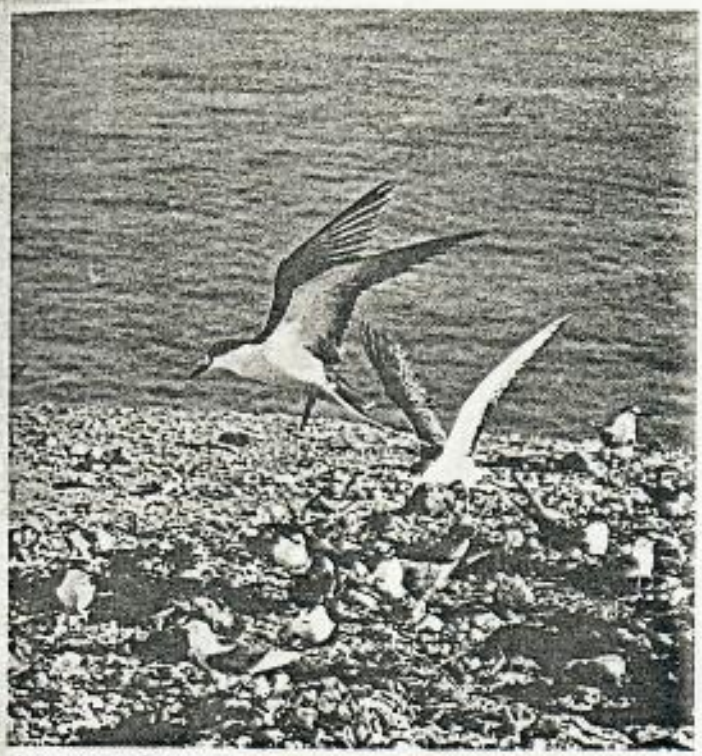
Further, reports of 2 fish-kill incidences received from the public were investigated in cooperation with the State Department of Health. Reports of the fish-kills were submitted to the U.S. Enviromental Protection Agency as required. In addition, technical guidance was provided on numerous occasions to agencies or individuals who requested information on proposed activities that my occasion conflicts with fish and wildlife values.



Wildlife Biologists survey seabirds on the Island of Ka'ula to determine the impact of military activities on productivity. Sooty terns numbering in the thousands hover overhead.

Nene (Hawaiian Goose) Restoration Program

The nene restoration project continued with production of young at Pohakuloa and the study of the birds in the wild to determine distribution, movements, reproduction and survival on Hawaii and Maui. Weather conditions improved on Hawaii and nests or broods of young nene were observed at all of the Nene Sanctuary areas except Kahuku. On Maui, several nests were observed and at least three broods were hatched. A total of 47 young nene were released at the Kahuku Sanctuary in Kau on Hawaii. This brought the total number of nene released on Hawaii since the release program began in 1960 to 1,319 birds. In addition 473 nene have been released by the State in Haleakala Crater on Maui.



A sooty tern colony on the Island of Ka'ula. 50,000 of these birds were seen on a survey conducted by the Department in March under the auspices of the U.S. Navy.

Alala (Hawaiian Crow) Restoration Program

Field studies of the alala in the Kona area were continued in cooperation with the U.S. Forest Service. During the year several nests of wild birds were studied and at least three young birds are known to have survived. These young plus one pair of adults were banded with colored bands so that subsequent observations can be made on movements, habits, and longevity. At Pohakuloa two pairs of alala nested and one young was hatched. The parent birds, which were very young and inexperienced failed to feed the nestling and efforts to hand-feed it were unsuccessful. The successful hatching of this baby alala marked a significant breakthrough for the project. However, a setback was suffered with the loss of three adult birds to unconfirmed causes.

Koloa (Hawaiian Duck) Restoration Program

Young Koloa produced at the Endangered Species Propagation project on Hawaii were released on the Island of Oahu to augment the wild population. Forty-six were released at Waimea Valley and 31 were released at Kawainui Marsh. Nesting occurred and young were produced in both areas and reports from other areas on Oahu indicate wide dispersal of these birds or their progeny.

Endangered Species Preservation Program

Wildlife biologists participated in the review and refinement of eight endangered species recovery plans. The plans are being prepared by teams of specialists appointed by the U.S. Fish and Wildlife Service and describe the actions needed to preserve twenty-three species of native Hawaiian birds which are considered endangered. For certain species the actions being recommended are primarily related to preserving and improving habitat for the birds. For other species strong research programs will be needed to determine the factors limiting the population before positive action plans can be finalized. The recovery plan for the Palila and another plan covering the Hawaiian stilt, Hawaiian coot and the Hawaiian gallinule were completed.

Field studies of endangered birds involved both water and forest brid species. Waterbird studies included investigations to determine nesting habitat requirements and production of Hawaiian stilt on Oahu and Kauai. Color banding of Hawaiian stilt was also begun at selected sites on Oahu and Kauai to determine patterns of both inter- and intra-island movement. To date 117 stilt have been marked.

Forest bird investigations included monitoring the Palila population on Mauna Kea and surveys of forest areas on all islands to determine habitat conditions and distribution of various species. Division personnel also participated with the U.S. Fish and Wildlife Service in a cooperative forest bird survey project designed to determine the status and distribution of endemic species. To date the islands of Hawaii, Molokai and Lanai have been surveyed.

Annual inventories to determine the number of endangered Hawaiian stilts and coots as well as to monitor trends of other native waterbird populations were conducted in January and August, statewide. The results of the stilt and coot censuses were as follows:

	July, 1978	January, 1979
Hawaiian Stilt	1,006	523
Hawaiian Coot	917	422

CULTURE AND RECREATION PROGRAM

Activities under this program are directed toward enriching the leisure time activities of the public by providing opportunities and facilities for developing skills and participation in inland and ocean-based recreation activities. These include: investigations, surveys, and inventories of fish and wildlife species and populations; sport fishemen surveys and operation of hunter and fishermen checking stations; monitoring of introduced fish and wildlife species; development and maintenance of public hunting and fishing areas; and information and education activities to promote better understanding and support of the program.

Northwestern Hawaiian Islands Resource Assessment

Some 138 species of fishes representing 38 families were recorded from the nearshore areas from Nihoa to Midway during surveys conducted between August 4 and September 5, 1978. During the survey, 54 species of algae and 19 species of stony coral including the Acropora genus, uncommon to the main islands, were noted and/or collected for determining species composition. Fish samples were also collected for identification, length-weight relationship, stomach content analysis, age (otolith) study, and ciguatera toxin analysis. As part of the continuing tri-party undertaking with the Federal Departments of Commerce and Interior to assess the fauna and flora of the NWHI area, the data gathered by the DLNR will be used in conjuctin with those gathered by the U.S. National Marine Fisheries Service and Fish and Wildlife Service to formulate a resource management plan that would adequately address the concomittant concerns relating to the protection of unique fish, wildlife and other features in the area while allowing for rational use of the fishery resources.

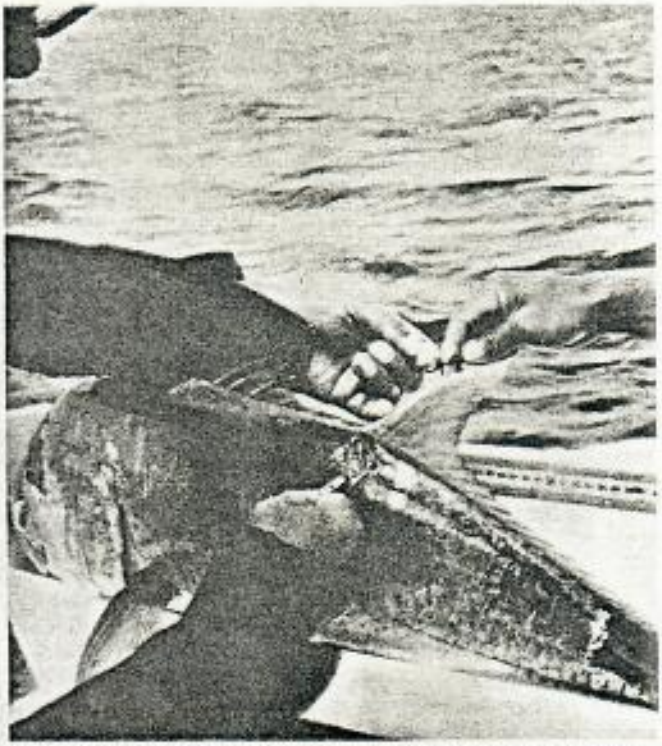
Impressive schools of moi and other highly desirable reef fish species are frequently observed at certain locations such as at Southeast Island of Pearl & Hermes Reef in the Northwestern Hawaiian Islands.

Waikiki-Diamond Head Marine Fisheries Management Area

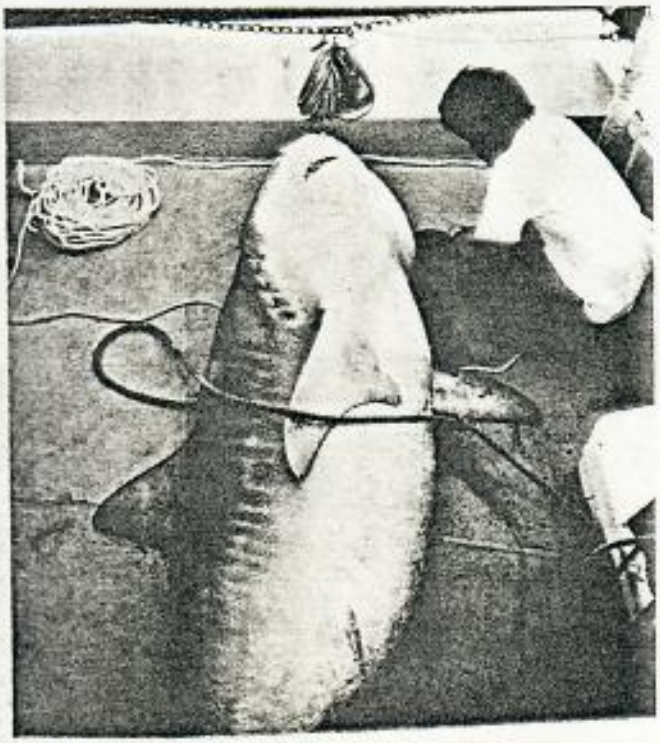
Pursuant to Regulation 45 of the Division of Fish and Game which became effective in May, 1978, the shoreline waters between the Kapahulu-Waikiki Beach Groin and the Diamond Head Lighthouse has been closed to all fishing since July 1, 1978. The establishment of the Waikiki-Diamond Head Shoreline Fisheries Management Area is the State's first trial effort to manage marine aquatic resources on a management-by-area basis. Intensive monitoring of the area is being accomplished through monthly surveys to measure changes in species composition and abundance, and biomass. Preliminary survey results indicate that an increase in fish biomass is occurring within the fisheries

Since the establishment of the "closed" fishing period at the Waikiki-Diamond Shoreline Fisheries Management Area in July 1978, the frequency of encountering weke and other reef fish species within the closed area has increased.

Large schools of ahoehoe are frequently encountered in the inshore waters of the Northwestern Hawaiian Islands.



Information from tagged & retrieved ulua will be applied to studies on their growth rates and migration patterns as part of the Northwestern Hawaiian Islands Resource Assessment Survey.



Tiger sharks such as this 11-footer are common in the nearshore waters of the Northwestern Hawaiian Islands.

management area. Further intensive monitoring will be needed to measure the changes that take place when the area is opened to fishing beginning July 1, 1980. The first year (FY 1980-81) of the "open" period will only allow pole and line fishing. In the second year (FY 1981-82), all legal means of fishing will be allowed. Subsequently, beginning July 1, 1982, the area will again be closed to fishing for a period of two years and henceforth, such "open to fishing" and "closed to fishing" periods shall be consecutively alternated on a two-year basis. Information on both the aquatic resources and fishermen catch and effort will be gathered to determine the effectiveness of the project. Based on the results of this trial effort, the establishment of other fishery management areas will be considered.

Na Pali Coast, Kauai Marine Survey

A marine survey was ,conducted along the Na Pali Coast on the northwestern shoreline of the island of Kauai between June 4 and 8, 1979 to obtain and evaluate shoreline and marine resources baseline information for developing a "Na Pali Coast Management Plan".

In brief, a total of 72 different species of fishes was recorded during the fish counts, and another eight species were observed during inspections made along 12 miles of coastline between Hanakapiai and Makaha Point. An average of 27 species were recorded at the fish counting stations while the estimated standing crops averaged 693 pounds per acre. An average of 3,834 fishes were counted at each station.

Further analysis of the data indicated that the baitfish, piha (*Spratelloides delicatulus*) was most numeros (47,800 individual fish) and the threadfin or moi (*Polydactylus sexfilis*) had the highest standing crop (3,019 pounds per acre).

Fishing in Hanamaulu and Waimea Bays, Kauai

Pursuant to Division of Fish and Game Regulations 47 and 50, fishing activities on Kauai in Hanamaulu Bay and off the Waimea Recreational Pier, respectively are being monitored to enforce the provisions of these regulations adopted in October, 1978. Fishermen conflicts at the Ahukini Recreational Pier in Hanaumalu Bay and at the Waimea Recreational Pier prompted public meetings and hearings which led to the ultimate establishment of these regulations.

Fishing in Pokai Bay, Oahu

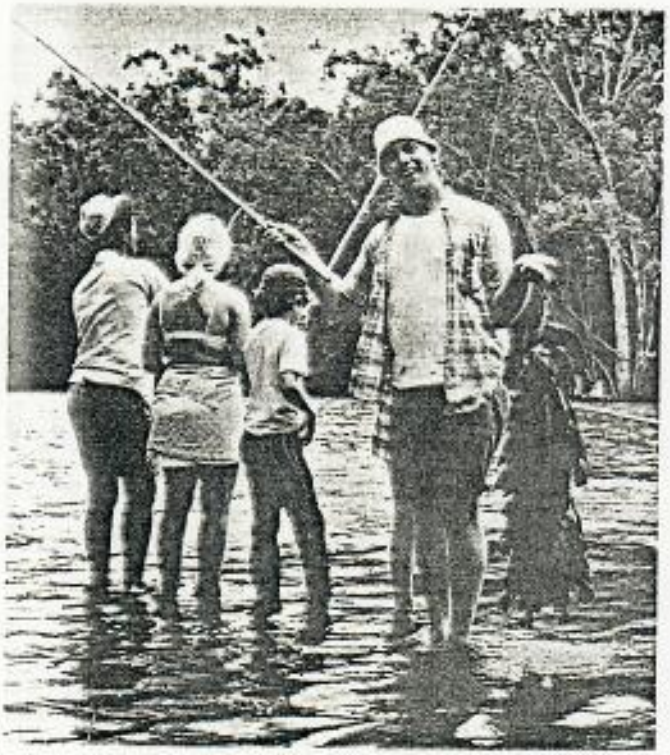
Act 38, SLH 1979, amended Section 188-35 of the Hawaii Revised Statutes to extend the existing controls on fishing in Pokai Bay to include the new Waianae Small Boat Harbor. It is anticipated that measures including fishing with one pole and line, a three-feet limit to the dimension of any used in the area, and other restrictions already applicable at the nearby Pokai Boat Harbor will serve to resolve the conflicts between anglers and net fishermen. The controls are especially needed during the hahalalu "runs" that are known to attract and congregate a considerable number of fishermen to the area.

Public Fishing Area (PFA)

Kokee PFA, Kauai.—Following an excellent rainbow trout fishing season in 1977, results for the 1978 (August 5 to September 30) were far below average. This may in part be attributed to very heavy rainfall during the preceding spring with resultant heavy freshets. Fishermen checking station data showed that 439 fisherman-trips resulted in the taking of only 507 trout. An estimated 992 fishing

hours were enjoyed, for a catch rate of 0.51 fish per hour. The season's largest trout, caught in the Puu Lua Reservoir, measured 21 inches and weighted 3 pounds, 13 ounces.

Wahiawa PFA, Oahu.—Creel census and fishermen interview data collected during FY 1978-79 showed continuing heavy usage of the Wahiawa PFA by the fishing public. An estimated 18,491 fishermen-trips were made to this facility during the year, and some 52,949 hours were spent in recreational fishing. It was further estimated that about 19,674 fish weighing a total of 9,889 pounds were caught during the same period.



Tilapia fishing in the Wahiawa Public Fishing Area.

Nuuanu Reservoir No. 4, Oahu.—Three open periods of public fishing for channel catfish were administered during this report period. These openings, which were the 21st through 23rd since 1969, were begun in August and November, 1978 and in May, 1979. A total of 3,278 fishermen caught and retained 1,779 channel catfish, weighing an estimated total of 2,072 pounds, during the open periods.

Fish Propagation and Stocking

Rainbow Trout.—Hatchery facilities at the Anuenue Fisheries Research Center were operated during the period February 15 to May 15, 1979, for the processing of two shipments of 50,000 eyed rainbow trout eggs each received gratis from the California Department of Fish and Game. Resultant production was some 68,700 young trout, which were all released into the streams and one reservoir of the Kokee Public Fishing Area on Kauai for annual maintenance stocking.

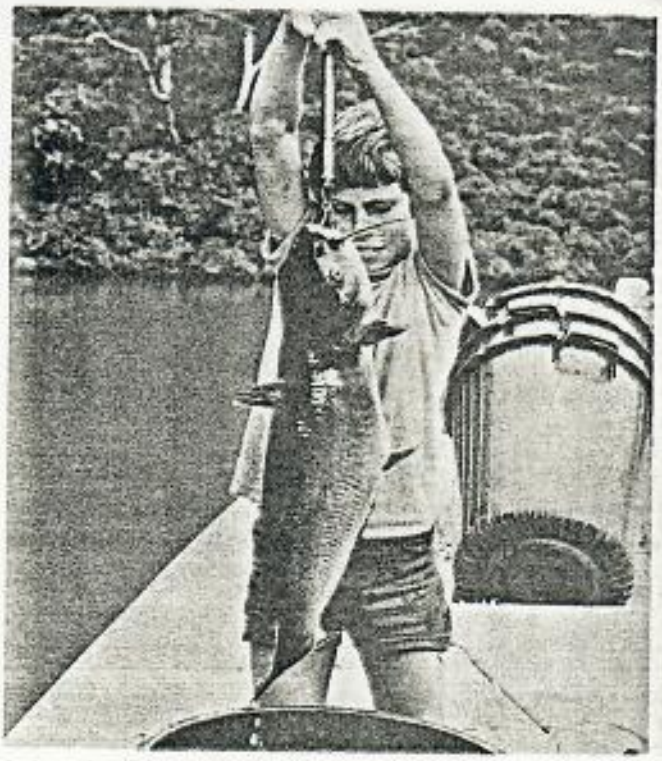
Channel Catfish.—An estimated 30,700 channel catfish fingerlings were stocked in the Nuuanu Reservoir No. 4 during FY 1978-79. These fingerlings were part of the stock obtained from thirteen spawns (egg masses) collected from the Reservoir in May-June, 1978, that were hatched and reared for varying periods in hatchery facilities at the Anuenue Fisheries Research Center.

Public Hunting Areas

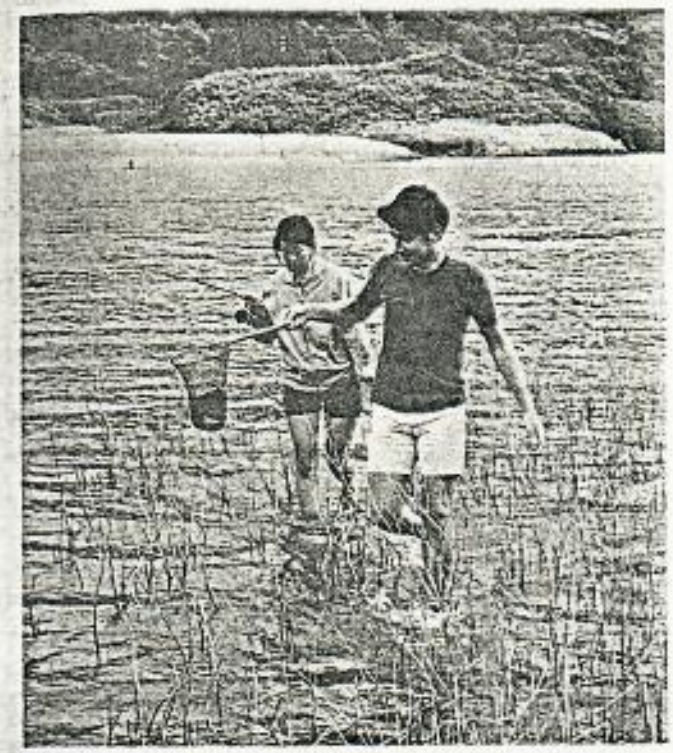
Over 1,000,000 acres of land in the State are managed by the Department for public hunting. These include State-owned lands within the Conservation District, Hawaiian Homes Lands, Forest Reserves, Federal lands operated under management agreements and private lands made available through cooperative agreements. These lands include 428,914 acres which have been designated as "Game Management Areas" because of their exceptional potential for public recreational hunting.

Statewide, game mammal hunters made 22,767 trips on game management areas, which was somewhat lower than the previous year. The decrease in hunter trips produced a lower harvet of game mammals; hunter success in 1978-79 was slightly lower than in 1977-78. A total of 2,638 game mammals was harvested on game management areas including 374 feral sheep, 1,207 feral pigs, 652 feral goats, 337 axis deer, 56 mouflon sheep, and 12 blacktail deer. Additional numbers of pigs and goats were harvested on other public hunting areas where records were not kept. Also, the harvest on private lands, for which no data are available, was undoubtedly significant, particularly for axis deer and feral pigs.

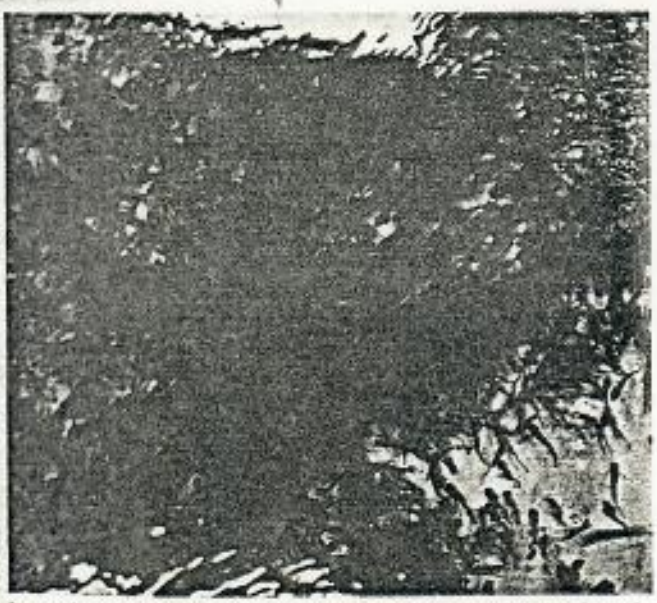
Compared to the previous year, in 1978-79 game bird hunters made more hunter trips but experienced lower harvest success. This year 8,769 hunter trips were made into public hunting areas and the total harvest of 5,205 game birds included:



A channel catfish from the Ku Tree Reservoir in the Schofield Barracks Military Reservation—showing excellent growth and condition as a result of an experimental supplemental feeding program.



Lady angler gets assistance in landing channel catfish among weed stumps in the Nuuanu Reservoir No. 4.



Approximately 31,000 channel catfish fingerlings were reared at the Anuenue Fisheries Research Center and stocked into the Nuuanu Reservoir No. 4.

Chukar partridge	1,521	Grey francolin	374
California quail	942	Black francolin	245
Ring-necked pheasant	916	Japanese quail	119
		Lace-necked dove	133
Nepal Kalij pheasant	24	Rio-Grande Turkey	80
Erchel's francolin	620	Gambel's quail	6
Barred dove	225		

Development, Maintenance and Operation of Game Management Areas

Development, maintenance and operation activities on the public hunting areas to enhance game bird and mammal productivity, and to provide facilities for hunters was continued. Artificial game bird food supplies to supplement wild food plants were installed at Kekaha and Wailua on Kauai as a means of enhancng productivity. Other projects included the installation of five fiberglass game watering units on management areas on Lanai, Molokai, and Maui. Big game and game bird water units, 117 miles of hunter access roads, hunter checking stations and informational and boundary signs were maintained on all islands. On Hawaii Island, two animal exclosures of five acres were contructed on Mauna Kea at Puu Laau to eventually accommodate plantations of the native mamane tree. Also on Hawaii, food plant seeds were broadcast in key public hunting areas to benefit game birds.

Game Wildlife Research and Surveys

Research studies and surveys were conducted to provide information for more intensified management of the game resources Statewide. Of significance were the ongoing biotelemetry study of mouflon on Mauna Kea to determine their daily and seasonal movements, and home range. In addition, transect data were collected in mouflon habitat on Hawaii to obtain a quantitative measurement of the vegetation on their range for food habit studies. Ground censuses and harvest data were used to estimte the feral sheep herd size on Mauna Kea. It was estimated that there was a pre-season population of 900 sheep. On Kauai, the blacktail deer range was judged to be in excellent condition on the basis of browse surveys made during the year and this was attributed to good rainfall. An estimate of 595 blacktail deer was made for the known deer range west of Waimea Canyon, which was a reduction from the estimated 800 of last year. Ground surveys to determine preseason populations of Axis deer on Lanai and Molokai were completed in October. It was estimated that there were 2,438 deer on the Island of Lanai and 500 deer on the public hunting areas on Molokai available for hunting.

REPORT TO THE GOVERNOR

for the fiscal year 1977-1978

DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE OF HAWAII

Honolulu, Hawaii
January 1980

At leeward Oahu, State-owned pastureland on the north slope of Waianae Valley is proposed for development to accommodate livestock operations in conjunction with nearby existing truckfarming activities. The scarcity of water is a major constraint, and the Department is working with the Honolulu Board of Water Supply to find a suitable solution to the water supply problem.

Meetings on Maui with Hana-Keanae residents have generated interest in establishing another state agricultural partk. It is hoped that young farmers can be induced to expand commercial farming including taro plantings, a declining industry today. Even aquaculture is being considered to derive additional benefits from the water resources of this area.

SECTION 4

PROGRAMS FOR ECONOMIC DEVELOPMENT

COMMERCIAL FISHERY (LNR 153)

The activities under this program directed toward assisting commercial fishery enterprises by increasing productivity through improvements in production methods, product processing, equipment usage and management methods, and developing new and improved aquaculture products by providing technical assistance and demonstration projects so as to enhance the quality and diversification of Hawaii's commercial fishery production. Management oriented biological studies and analysis of commercial fishermen catch reports are conducted to gather information about commercially important fish and shellfish species to determine the effects of fishing so that appropriate laws and regulations may be adopted to manage and protect the resources.

Master Plan on Hawaiian Fisheries Development

The Ninth Legislature of the State of Hawaii appropirated $150,000 under the Special Program Approriations for fiscal year 1978-79 (Act 243, SLH 1978) to be expended by the Department of Land and Natural Resources for the formulation of a "Master Plan on Hawaiian Fisheries Development (LNR 153)." House Resolution No. 122, H.D. 1 and Senate Resolution No. 125 specify that the Master Plan is to focus on the following development components: harbor facility requirements, financing programs for fleet expansion, conservation and management policies, bait production, marketing and personnel training.

The Plan will include findings and specific recommendations addressed to government and private industry stemming from the assessment of the developmental components. Further, the Plan will address integration of developmental programs for each promising fishery including definition of task, budgets, implementing agencies/personnel, and a recommeded organizational structure for implementation. A program manager responsible to the director of the Fish and Game Division will direct and coordinate the Master Plan.

Regulation on Management of Pink Coral and Gold Coral

The Division of Fish and Game, Regulation 41 - Relating to the Management of Pink Coral and Gold Coral, became effective on September 23, 1977. Based on studies by Dr. Richard Grigg, world's foremost authority on the Hawaiian pink and gold precious coral species, the regulation manages these resources at the Makapuu Bed through measures that include establishment of a quota on the pink coral to assure harvests on a sustainable yield basis, prohibition on the use of non-selective gear such as nets, dredges, trawls, etc., to harvest corals, and implementation of a permit system for the taking and monitoring of the pink and gold coral resources. Through this regulation, the State envisions the judicious management of the pink and gold coral resources at the Makapuu Bed to complement the development of a deep-water gem coral industry in Hawaii.

Catfish Project

Anuenue Fisheries Research Center is conducting a reproductive physiology study of the channel catfish. Adult catfish are being held under conditions of controlled temperature and photoperiod in an effort to develop a method to induce spawning. Plans to use electrophoresis as a means to determine correlation between substances such as vitellin in the blood and ovarian development cycle are underway. Arrangements to import mature channel catfish from the California Fish and Game have been made to initiate this experiment.

Takuji Fujimura

Mr. Fujimura, head of the State's Anuenue Fisheries Research Center and foremost authority on mass culture techniques of the Malaysian Prawn, was honored with the Governor's Award for Distinguished State Service. The award was presented in recognition of Fujimura's accomplishments and work as a leading proponent of prawn cultivation as a world-wide industry. His perservering leadership and technical knowledge has helped spawn the growth of prawn aquaculture throughout the entire world. Starting with a handful of prawns in 1964, Fujimura has refined and perfected his techniques, so that today, his facilities are involved with the breeding of millions of prawns annually as well as continually replying to requests for information and data.

COMMERCIAL FISHERY, PRODUCT DEVELOPMENT (LNR 171)

Oceanic Institute Fish Hatchery

Upon completion of plans and designs and execution of an agreement between the State and Oceanic Institute, the Department requested allotment of funds necessary to begin construction of a fish hatchery—the first of its kind in the State—at the Oceanic Institute, Makapuu Point, Oahu.

Under the agreement, research on aquaculture species and production techniques essential for expanding and diversifying Hawaii's aquaculture industry will be conducted at the hatchery by both the Department of Land and Natural Resources and the Institute. The hatchery will provide a prototype for possible future large-scale hatchery operations in the State, and will also serve as a training center for hatchery technicians.

stocking capabilities, the facility will enable the Center to increase its services from 120 acres of prawn ponds to more than 300 acres.

In addition to the thermo-regulated prawn hatchery, a design for a water analysis laboratory was completed and the contract awarded. The construction (to begin shortly) and completion of this facility will add immeasurable to the prawn research and development work now being conducted at the Anuenue Fisheries Research Center.

Further, in cooperation with the University of Hawaii Prawn Aquaculture Program, efforts are continuing to improve existing prawn culturing and pond management techniques, develop efficient and economical prawn processing and marketing methods, and improve existing prawn brood stock genetically.

Enforcement

Enforcement activities under this program are summarized as follows: patrolled 54,618 miles by vehicle, foot and boat; contacted 14,255 persons engaged in commercial fishing; conducted 10,347 inspections of commercial fishing boats, fish markets, restaurants and peddlers; investigated 17 commercial fishing complaints; and issued 1,453 commercial fishing licenses and permits pertaining to the sale of fish and fish products. A total of 25 citations was issued for commercial fishing and related violations.

FORESTRY-PRODUCTS DEVELOPMENT (LNR 172)

Energy Tree Farm Program

The Division of Forestry devoted a great deal of effort in developing plans for potential Energy Tree Farm to support the alternate energy program of the Administration and the Legislature. As a result, the Legislature appropriated $1 million for the Division activities.

The appropriations will provide for the planting of about 1 million trees per year on about 1,000 acres. The Division program is based on several premises.

1. Lands zoned for agricultural use should be used to the maximum extent they are possible.
2. Owners of suitable lands should develop their own lands and planting on State lands should be in support of a program of providing the fuel needs of a specific generating facility.
3. The presence of underdeveloped generating capacity at many sugar mills around the State and the need for the sugar industry to purchase imported oil to meet their fuel needs, provides many opportunities for the use of wood as supplemental fuel.

To pursue this program, the Division will increase the capability of its Central Tree Nursery to provide the necessary seedlings, survey young forest plantations to evaluate their success and potential as fuel, and to accelerate acquisition of data necessary for the selection of the most appropriate sites.

SECTION 5

PROGRAMS FOR ENVIRONMENTAL PROTECTION

FISH AND WILDLIFE (LNR 401)

The objectives of this program are to preserve and enhance endangered and other fish and wildlife species and their habitats through active protection, propagation and other management measures including monitoring of the resources, establishing sanctuaries, and evaluating proposed projects that may affect the resources of their habitats.

Marine Life Conservation District

The Department recently established through Division of Fish and Game Regulation 44, the Honolua-Mokuleia Bay Marine Life Conservation District on Maui to protect and preserve its aquatic features and resources. Further, upon completion of studies and gathering of documents, proposed regulations have been drafted to establish a marine life conservation district at Shark's Cove, Pupukea, Oahu. However, preliminary to administrative procedures, we are presently soliciting public comments and recommendations on the proposal.

The Waialea Bay area off Hawaii was surveyed to assess and evaluate the area for possible inclusion into the marine life conservation system. Based on the results of the survey, Waialea Bay, with its unique aquatic features and resources appears to be a promising location to establish as a MLCD. Previous underwater surveys off the Lapakahi State Historical Park shore revealed an abundance of marine life in an attractive setting. This site, Koai'e Cove at North Kohala, is also slated to become a MLCD.

Aquarium Fish Collecting Study

Monitoring activities of aquarium fish collectors using fine-mesh nets under a permit system was continued through data collected from monthly aquarium fish catch reports. The study revealed that a total of 434 permits were issued during FY 1977-78 of which 296 (68%) were for non-commercial, and 138 (32%) for commercial purposes. There are 385 permits issued on Oahu, 28 on Hawaii, 16 on Maui, 3 on Kauai, and one each on Molokai and Lanai. Evaluation of the monthly catch reports show that a total of 183,060 marine fishes and other organisms were collected, of which 5,281 or about 3% were for non-commercial use, and 177,779 or about 97% were for commercial purposes. The largest number of marine aquarium organisms (130,266) were collected off Oahu, followed by Hawaii (52,647), Maui (125), and Kauai, Molokai and Lanai (combined 22). The study also showed that 125,178 organisms were collected for commercial use off Oahu of which 121,251 or 97% were sold at a value of $220,937. The second largest commercial activity occurred off Hawaii where 52,532 organisms were collected and 52,224 or 99% valued at $85,932 were sold. Sixty-nine organisms caught by commercial collectors on Maui were not sold. There were no commercial aquarium fish collecting activities on the island of Kauai, Molokai and Lanai.

Environmental Impact Evaluations

Comments were prepared on evaluations of 292 proposals relative to Conservation District Use Applications, U.S.Army Corps of Engineers Public Notices, State land dispositions, draft and final Environmental Assessments and Environmental Impact Statements, animal importation permits, scientific collecting permits, and other projects that have potential impact upon the State's fish and wildlife resources and habitats. Activities associated with the evaluations include on-site visits, extensive research, and contact with knowledgeable persons on the subject areas and resources.

Further, reports of eight fish-kill incidences received from the public were investigated in cooperation with the State Department of Health. Reports of the fish-kills were submitted to the U.S. Environmental Protection Agency as required. In addition, technical guidance was provided on 37 occasions to agencies or individuals who requested information on potential conflicts with fish and wildlife values.

Nene (Hawaiian Goose)

The nene restoration project continued with the study of the birds in the wild to determine distribution, movements, reproduction and survival on Hawaii and Maui. Continued drought conditions on Hawaii resulted in a poor nesting season with only eleven nests being found. Young were produced at the Keauhou and Kipuka Ainahou Sanctuary areas, however, and wide dispersal of adults probably contributed to survival. On Maui the nesting season may have been more productive as two young of the year were noted in February of 1978. A total of 46 goslings was produced at the Pohakuloa propagation facility on Hawaii.

Two pairs were donated to the National Park on Hawaii for use as breeders in the Park Service re-establishment project at Volcano National Park and one gander was retained at Pohakuloa for breeding purposes. In addition, 48 adult nene were released in Haleakala Center at the Paliku release site. To date, 319 nene have been released at Kipuka Ainahou, 276 in the Keauhou Sanctuary, of Hawaii. A total of 473 have been released by the Department on Maui bringing the total liberated Statewide, since 1960 to 1,698.

Koloa (Hawaiian ~~Goose~~ DUCK)

Additional releases of young koloa were made on Oahu to augment the wild population. Birds produced at the Pohakuloa propagation station on Hawaii were released at Waimea Valley (26 birds), and at Kawainui Swamp (27 birds). Nesting occurred and young were produced in both of these areas. Reports of koloa from streams and ponds on Windward Oahu and the Honolulu area were received which indicate survival and dispersal of the species on Oahu.

Endangered Species Preservation

Division of Fish and Game biologists participated in the review and refinement of eight endangered species recovery plans. The plans are being prepared by teams of specialists appointed by the U.S. Fish and Wildlife Service and describe actions needed to preserve twenty-three species of native Hawaiian birds considered to be endangered. For certain species, such as the Hawaiian stilt, Hawaiian coot, Hawaiian gallinule and the Palila, the actions being recommended are primarily related to preserving habitat for the birds. For some species, however, strong research programs will be needed to determine the factors limiting the population before positive action plans can be finalized.

Field studies of endangered species included monitoring the Palila population on Mauna Kea, nesting habitat requirements and production of Hawaiian stilts on Oahu and Kauai and surveys of forest areas on all islands to determine habitat conditions and the distribution of various species.

Annual inventories to determine the number of endangered Hawaiian stilts and coots as well as to monitor trends of other native waterbird populations were conducted in January and August, Statewide. The results of the stilt and coot censuses were as follows:

	July, 1977	January 1980
Hawaiian Stilt	1090	890
Hawaiian Coot	1618	1241

Alala Restoration Project

Field studies of the alala in the Kona area were continued to determine this endangered species' habits, habitat requirements and needs for survival. During the year several nests of wild birds were observed which produced a total of six known fledglings. Three of the young birds were rescued from possible predation when they fell out of nests. They will be added to the small flock at the Pohakuloa Propagation project to produce young alala for release. Two other young birds were banded with color bands as nestlings. Study of these marked birds is providing valuable data on movements, habits and longevity. At Pohakuloa, the captive adult birds continue to fare well. The mated pair nested again this past season; however, no young were hatched. Hopes for the future of this project increased with the addition of the three new birds plus the invaluable experience gained to date.

Ah Fat Lee, who is in charge of the propagation project, was honored during the year for his extraordinary efforts on behalf of the Alala and other endangered species under his care. The Shikar Safari International, a prominent sportsmen and conservation organization named Mr. Lee the "Wildlife Officer of the Year" for 1977. Mrs. Barbara Lee who for many years has contributed unselfishly to the Alala project in volunteer time and materials was named an unpaid volunteer agent and biological consultant by the Board of Land and Natural Resources and was instrumental in the progress achieved at the Alala project to date.

Enforcement

Enforcement activities under this program are summaried as follows: patrolled 39,962 miles by vehicle, boat and foot; contacted 11,525 persons, conducted 21 investigations of complaints. A total of 21 citations were issued for violations under this program.

The proposal to consolidate the department's enforcement functions into a single unit was submitted to the legislature by the Governor. The legislature subsequently passed Senate Bill No. 2817 which became Act 171 of the 1978 Legislature. In brief, the new law authorized the creation of a Division of Conservation and Resource Enforcement which takes over the enforcement personnel and responsibilities belonging to the Fish and Game, Forestry and State Parks divisions. A public information and education program as well as a hunter safety program are also provided for to fill gaps in the department activities. Steps are underway to effectuate this new enforcement unit's role in protecting our valuable resources.

Barbara Lee, left photo, a volunteer consulting biologist in charge of the alala (Hawaiian Crow) project at Pohakuloa feeds one of her charges. An alala, in photo above, peers quizzically at Governor George Ariyoshi during his inspection trip to the wildlife propagation center at Pohakuloa.

The State of Hawaii is keenly interested in the wildlife conservation in the Northwestern Hawaiian Islands. Recently, the Coast Guard flew a contingent of Federal and State officials on an inspection trip with stops at Kure and Midway islands. On the left, Senator Joseph Kuroda approaches a young gooney while Senator Stanley Hara, on the right, prepares to photograph the refuge sign.

Rare and Endangered Species Program

A viable endangered species protection program requires basic information. For each rare and endangered species, we need to know where it is located, how it relates to the eco-system, what is required for survival and what constitutes its critical habitat.

Accomplishment during the year consisted of hiring a State botanist and setting up the basic endangered species program. This included:

1. Purchasing necessary botanical supplies and equipment.
2. Compiling known information about Hawaiian plants.
3. Assistance to outside agencies concerning potential endangered species on planned projects.
4. Initiating the hiring of a botanical team for field survey.

The Division of Forestry endangered species program has a good start.

Our plans are to complete work at Bishop Museum to compile information on:

1. Where the plant species were located in the past.
2. Where species information gaps exist.
3. Where to look for these plants today.
4. Consolidate the known information about the plant's critical habitat.

The endangered plant localities can then be mapped and/or computerized to give us information as to where species are located.

Field surveys by the botanical team will result in a written report of each project site. This report normally cover the following items:

1. A description of the plant communities found in the project area.
2. Endangered plant species found in the area, their frequencies, and locations.
3. Apparent range for any encountered endangered plant species (past and present - derived from Bishop Museum herbarium collections and field survey).
4. Recommendations for alleviating any potential land use conflicts.

The information requirements to manage the native forests of Hawaii are staggering. Very little scientific information is available about Hawaii's native plant communities. We have made a start at gathering management information. Understanding the problems facing our native plant communities will take years of steady, patient effort.

Fire Management

The most severe drought in record finally broke with the first Kona storms in late October. Two years of record low rainfall resulted in severe fires on the island of Hawaii. The Mauna Kea fire burned five hundred acres of mamanianaio forest. Approximately 20% of the existing palila habitat was destroyed.

In January, the Puu Anahulu fire burned 8,000 acres in the native forest areas of the saddle country of the Big Island. While this fire was still smoldering, another fire started along the Saddle Road at the Kaohe horse pasture and burned 3,000 acres again in native dry forest areas.

In early May, five hundred acres burned in Army Pohakoloa Training area and was stopped within the training area by a last ditch effort backfiring from roads on the perimeter of the training area. Throughout the summer, serious fires threatened homes in the Waianae area of Oahu and on Molokai and Maui. Repeatedly prompt action by county fire departments and Division of Forestry personnel saved homes threatened by wild fire. However, the Spencer Park Pavilion was destroyed by a wild fire near Kawaihae, Hawaii.

The Saddle area of the Big Island down to Puako is one of the most serious fire problem areas in the State. Fires are all started by people. The most common causes being arson, military training activities and sources related to travel along highways such as vehicle exhaust or discarded cigarettes.

The protection program during the last year has concentrated on training and development of basic fire management information.

We have conducted statewide training in helicopter management stressing safe use of helicopters on fires, basic wildland fire fighting and a chain saw operators class emphasizing snag felling and safe use of the saws. Our objective is to train personnel capable of organizing large scale fire suppression activities.

Wildland fire control in Hawaii is a coordinated effort of county fire departments backed by the Division of Forestry and volunteer District Fire Wardens. At best, we have limited resources with which to fight a large wildland fire. To prevent major fires and resultant destruction, we need to be able to predict extreme fire danger conditions and to be prepared to respond.

Being able to plan for serious burning conditions is a problem that face all wildland firemen. A national system of rating fire danger has been developed.

The heart of the system is a computer program called AFFIRMS which records weather information and calculates fire danger. Anyone with a computer terminal can use the program and for Hawaii it means we can have a record of observed fire danger and a forecast of tomorrow's fire problems.

This system, combined with improved fire reporting, will provide information needed to preplan a response to predicted fire conditions that is both effective and appropriate to the situation.

Obtaining timely significant weather observations is always a problem. Fire weather observations are needed in areas where few people live and who wants to read weather instruments a 1 p.m. each day, day in and day out. Its hard to find a reliable observer.

The Division of Forestry has entered into a cooperative testing program with the U.S. Forest Service to test a remote automatic weather station. The station is solar powered and transmits all necessary weather observations to the AFFIRMS computer through the GOES Satellite.

The entire process is automatic and reports the fire danger daily through the AFFIRMS program.

Exciting programs are being developed by the Division of Forestry fire management staff. These developments could be analogous to the development of aviation. For years we have flown by the seat of our pants and reacted to emergencies. Now we are developing instrumentation to give us a planned response based on conditions.

Our objective is improved wildland protection at a significantly reduced cost.

Utilization of the State Computer Services

To facilitate the compilation of the employee' monthly time sheet and accomplishment report, the Forestry Division, working with EDP, developed a computer program. The computer report shows how much manpower and cost are expended for each activity by PPB program. This infor-

plans, includes pruning of existing landscape foliage, cleanup and establishment of a small picnic ground, and repair and upgrading of existing paved areas and facilities for public use.

A park development plan is to be prepared. This park site has traditionally been a meeting place on the shore of Kaneohe Bay. Bordered by Heeia Fish Pond on one side, and Heeia Kea Boat Harbor on the other, the site continues to offer opportunities as a community headquarters and information center for Kaneohe Bay, as well as a richly landscaped scenic picnic area.

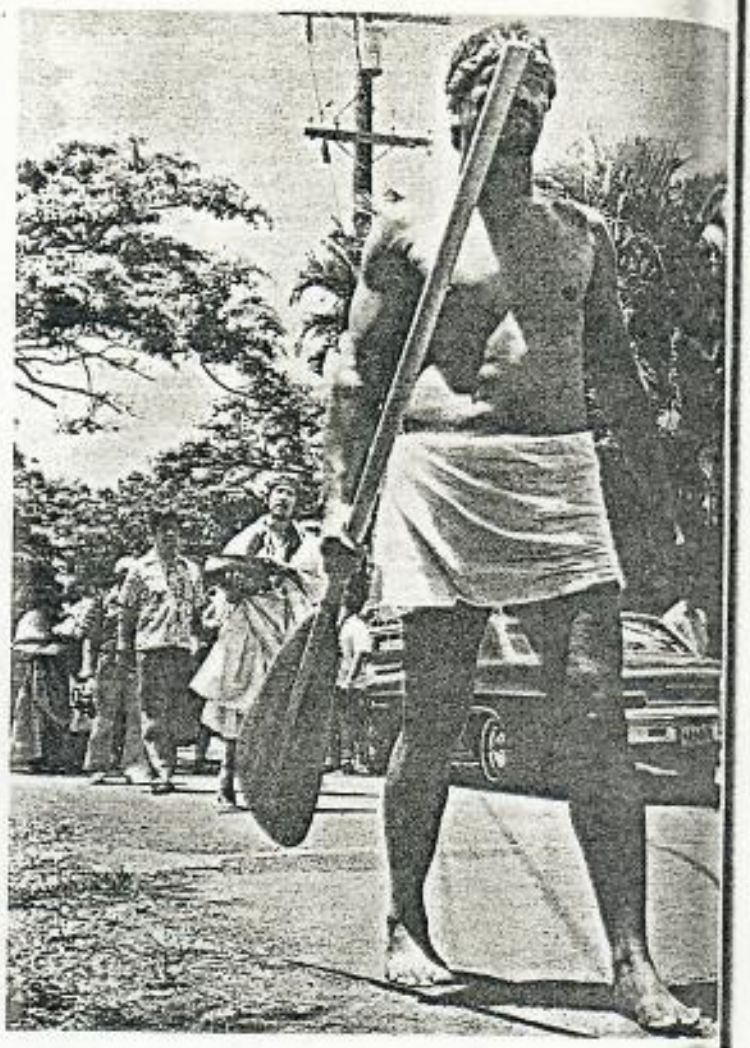
Northwestern Hawaiian Island Resources Assessment

The Department continued its participation in a joint tri-party undertaking involving the State and Federal Departments of Commerce and Interior to assess the fauna and flora of the Northwestern Hawaiian Islands. The data gathered will be used to formulate a resource management plan that would adequately address the concomitant concerns relating to the protection of the unique fish, wildlife and other features of the area and at the same time allow for rational use of the fishery resources. The surveys of the nearshore resources of this distant, remote and vast area is being accomplished through cooperation with the U.S. Fish and Wildlife Service and National Marine Fisheries Service including use of their research vessel. To date, our personnel have made two cooperative cruises to the NWHI, a 15-day preliminary survey in May, 1976, and more recently during the period July 4 through August 17 of 1977.

Some 159 species of fishes representing 42 families were recorded during the last survey which encompassed nearshore waters from Nihoa Island to Midway Islands. In addition, 43 species of algae were observed and/or collected for determining species composition, and fish samples were collected for identification (three species uncommon to the main Hawaiian Islands were recovered), length-weight relationship, stomach content analysis, age (otolith) study, and fish toxin analysis.

Wakiki-Diamond Head Marine Fisheries Management Area

Pursuant to effecting Regulation 45 of the Division of Fish and Game in May 1978, the shoreline waters between the Kapahulu Waikiki Beach Groin and the Diamond Head Lighthouse will be closed to all fishing for a period of two years beginning on July 1, 1978. The proposed establishment of this Fisheries Management Area between Waikiki and Diamond Head is the State's first trial effort to manage marine aquatic resources on a management-by-area basis. This first trial is a forerunner of what is hoped to become a statewide "Kapuku Plan", a management program to increase our coastal marine resources to enhance fishing opportunities. The University of Hawaii's Marine Option Program is expected to assist in underwater surveys and monitoring to evaluate the success of this plan. The anticipated restoration of aquatic resources in the area will require intensive monitoring through surveys in order to measure changes in species composition and abundance, and biomass. Further, intensive monitoring will also be needed to measure the changes that take place when the area is opened to fishing beginning July 1, 1980. Information on both the aquatic resources and fishermen catch and effort will be required to determine the effectiveness of the project.



An impressive native ritual highlighted the dedication of Heeia State Park. In symbo fashion, the Governor follows the Kahuna (holding the bowl).

GENERAL ADMINISTRATION FOR CULTURE AND RECREATION (LNR 809)

Natural Area Reserves System

During the past year, a gigantic leap was taken in expanding the State's natural area program. After a short period of discussion, the Natural Area Reserves System Commission and the Department jointly developed a memorandum of understanding. Among other things, the Commission and the department were to jointly conduct field surveys with the department preparing the field reports. The memorandum was greeted with enthusiasm by all concerned.

With the memorandum in force, 17 sites were recommended for the island of Hawaii. Following a series of public hearings on 10 of the sites, 7 sites were considered to be suitable for Natural Area Reserve status and are being prepared for approval by the Board of Land and Natural Resources.

Table 12. FISHING AND HUNTING VIOLATIONS - 1977-78

TYPE OF VIOLATION	NUMBER
FISHING VIOLATIONS	
No Commercial Fishing License	10
Unlawful Sale of Undersize Fish	3
Unlawful Sale of Speared Fish	2
Unlawful Fishing with Fine Mesh Net	16
Unlawful Possession of Fine Mesh Thrownet	18
Unlawful Fishing with Fine Mesh Thrownet	4
Unlawful Use of Nets in Restricted Area	2
Restricted Netting of Halaluu	5
Taking of Lobsters during Closed Season	9
Unlawful Spearing/Taking of Lobster with Eggs	13
Taking/Possession of Undersize Lobster	9
Unlawful Spearing of Crustacean	1
Unlawful Taking of Crustaceans with Eggs	3
Unlawful Taking/Possession of Clams during Closed Season	38
Unlawful Possession of Oysters	1
Unlawful Taking/Possession of Mullet during Closed Season	26
Unlawful Taking/Possession of Papio Undersize (7")	1
Unlawful Possession of Octopus Less Than One Pound	7
Unlawful Possession of Green Sea Turtle Less Than 36 Inches	1
Fishing Without a Freshwater Game Fishing License	17
Freshwater Game Fishing License Not on Person	2
Restricted Netting in Wahiawa P.F.A.	3
Unlawful Snagging of Fish in Wahiawa P.F.A.	1
Illegal Fishing Gear in Wahiawa P.F.A.	1
Unlawful Fishing in Marine Life Conservation District	6
Unlawful Fishing in Hanauma Bay	1
Unlawful Fishing with Thrownet in "NAR" (Maui)	1
Unlawful Fishing with Thrownet in Waiakea State Pond	1
Unlawful Possession of Chemicals on a Fishing Craft	3
TOTAL	205
HUNTING VIOLATIONS	
Hunting without a License	31
Failure to Display Hunting License	7
Failure to Check in at Checking Station	14
Failure to Check Out at Checking Station	2
No Entry Permit	3
Hunting During Closed Season	7
Hunting on Non-Hunting Day	3
Hunting on Private Property without a Permit	2
Hunting in G.M.A. Without a Permit	1
Unlawful Night Hunting on Private Land	3
Unlawful Hunting of Deer at Night	2
Hunting Game Mammal at Night	11

Table 12. (continued)

HUNTING VIOLATIONS	NUMBER
Entering/Possession of Firearm in G.M.A. Without a Permit	11
Hunting of Goats Without a Permit	5
Unlawful Hunting with Dog in Restricted Area	1
Unlawful Possession of Sheep During Closed Season	1
Unlawful Possession of Live Sheep from G.M.A.	1
Possession of Untagged Sheep	2
Hunting/Killing of Nene Goose in the Wild	1
Exceeding Bag Limit (Doves)	1
Illegal Hunting Arms	4
Carrying Firearm in Closed Hunting Area	2
Unlawful Firearms in Archery Area	1
Loaded Firearm in Vehicle	2
Unlawful Possession of Loaded Firearm in Safety Zone	1
Discharge of Firearm in Safety Zone	4
Failure to Wear Orange Colored Garment While in G.M.A.	4
TOTAL	127

MISCELLANEOUS VIOLATIONS	NUMBER
Failure to Submit Fish Catch Report	3
Failure to Submit Fish Dealer's Report	4
Refusing to Permit Inspection	1
Denying Rights of Entry to Officer	1
Unlawful Entry into Nuuanu Reservoir #4	4
Unlawful Landing on Manana Island	4
No Adult Supervision in Wahiawa P.F.A.	1
No Life Preserver in Wahiawa P.F.A. (Required)	5
Unlawful Possession on Firearm in P.F.A.	1
Launching Vessel in "NAR" (Maui)	2
Unlawful Release of Animal in "NAR" (Maui)	1
Parking of Vehicle within Restricted Area of "NAR" (Maui)	1
Selling of Turtle Products without a License	1
Unlawful Carriage of Firearm	3
Place to Keep Firearm	1
Carrying a Firearm (handgun) Without a Permit	1
Assault III	1
Terroristic Threatening	1
TOTAL	36

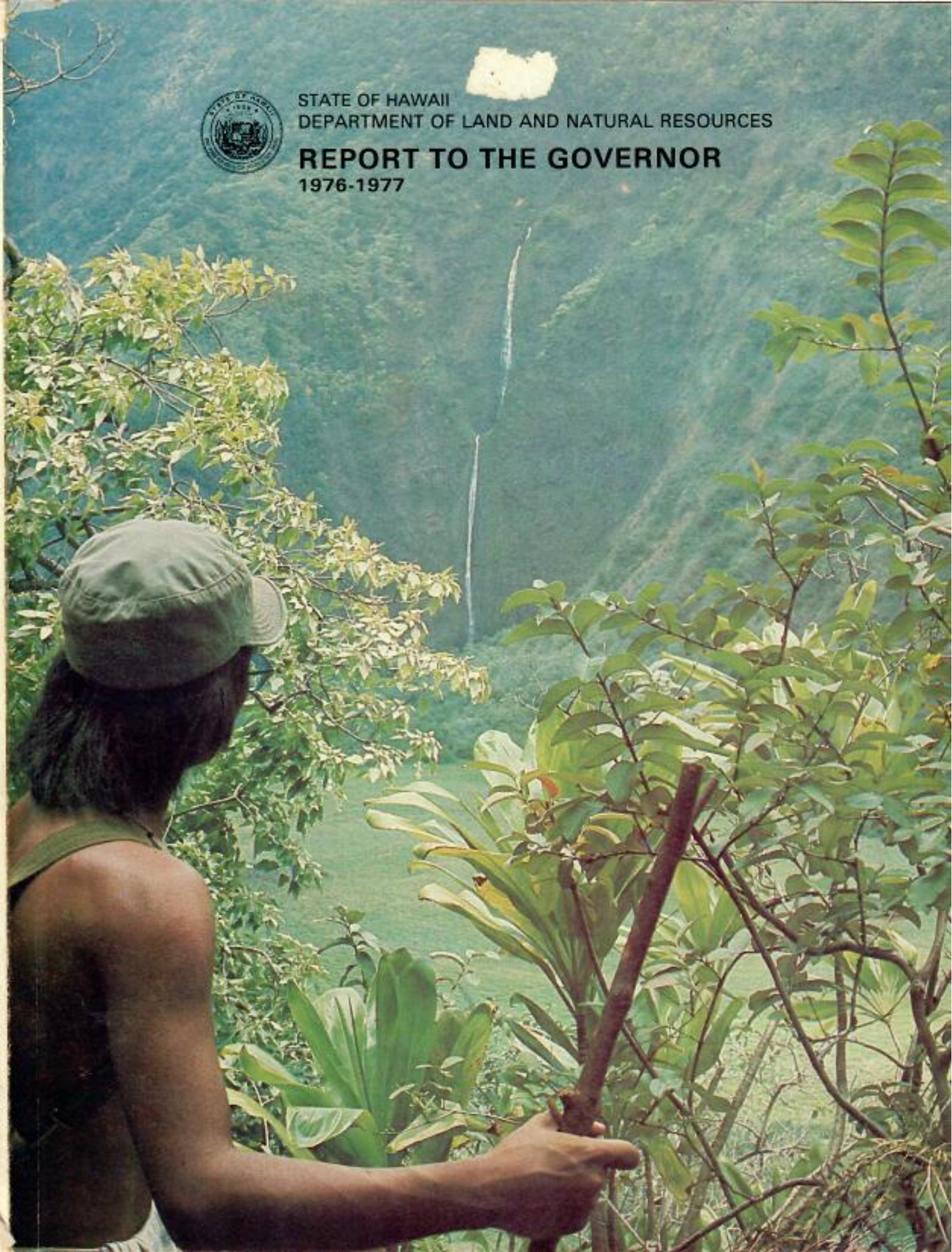
TOTAL OF ALL VIOLATIONS 368

Table 13. CITATIONS, ARRESTS, PENAL SUMMONS AND DISPOSITIONS 1977-1978

SUBJECT	THE STATE	HAWAII COUNTY	KAUAI COUNTY	MAUI COUNTY	HONOLULU COUNTY
Citations	337	68	46	71	152
Arrests	19	1		14	4
Penal Summons	12			6	6
Number of Charges (Cases)	368	69	46	91	162
Pending Cases from Prior FY	88			15	73
Total Number of Cases	456	69	46	106	235
Bail Forfeitures	64	18	3	7	36
Juvenile Authorities/Court	33	17	8	7	1
Cases Pending	105	9	2	11	83
Cases Dismissed	14	1		5	8
Convictions	21	5		8	8
Fines	12	4		4	4
Suspended Fines	3			3	
Suspended Sentence	5	1			4
Split Fines (Fines/Suspended Fines)	1			1	
Other Sentences					

Table 14. INCOME FROM CITATIONS AND ARRESTS 1977-1978

AREA	FINES	BAIL FORFEITURES	SUSPENDED FINES
State	$500.00	$1,680.00	$190.00
Hawaii County	100.00	450.00	
Kauai County		75.00	
Maui County	300.00	325.00	190.00
Honolulu County	100.00	830.00	



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

REPORT TO THE GOVERNOR
1976-1977

DEPARTMENT OF LAND AND NATURAL RESOURCES — ANNUAL REPORT 1976-1977

BOARD OF LAND AND NATURAL RESOURCES

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Larry Mehau ..... Member-Hawaii

Mr. Manuel Moniz ..... Member-Maui

Mr. Hisao Munechika ..... Member-Kauai

Mr. Moses Kealoha ..... Member-Oahu

Mr. Shinichi Nakagawa ..... Member-At Large

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII

W. Y. THOMPSON, CHAIRMAN
BOARD OF LAND & NATURAL RESOURCES
EDGAR A. HAMASU
DEPUTY TO THE CHAIRMAN

DIVISIONS:
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FISH AND GAME
FORESTRY
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P. O. BOX 621
HONOLULU, HAWAII 96809

December 29, 1978

Honorable George R. Ariyoshi
Governor of Hawaii
State Capitol
Honolulu, Hawaii

Dear Governor Ariyoshi:

The past fiscal year 1976-1977 saw considerable groundwork laid for the impending geothermal regulations. Hearings were initiated to gather a wide range of opinions, the legal aspects of this underground resource was especially singled out for intensive study. Similarly, the revision of Regulation No. 4 which covers the administration of the State's conservation districts was readied for a series of public hearings.

Mr. Christopher Cobb, Chairman of the Board during the past two and one half years resigned to resume his private law practice just before the end of the fiscal year. Two new Board members were appointed. Mr. Takeo Yamamoto who replaced Mr. Hisao Munechika as the Kauai Board member and Mr. Stanley Hong who succeeded Mr. Shinichi Nakagawa as the Oahu Board member. Mr. Nakagawa was appointed to the State Land Use Commission.

Mr. Tom Tagawa, State Forester for 22 years, retired in December, 1977. His years in office coincided the rise of the environmental movement.

The acquisition of parks sites on Oahu was a major accomplishment under the Governor's program to provide adequate recreation areas for metropolitan Honolulu. These lands for future parks included: Malaekahana, Salt Lake, Manana-Uka, Heeia, Sacred Falls, Makena-La perouse, Makua-Kaena and Wawamalu.

Increased emphasis was centered on aquaculture and agricultural parks. These are priority items for strengthening the State's economic development.

Many other activities were carried out to fulfill the department's responsibilities. Your leadership has given the department clear direction for which we are grateful and mindful.

Respectfully submitted,

W. Y. Thompson

W. Y. THOMPSON, Chairman

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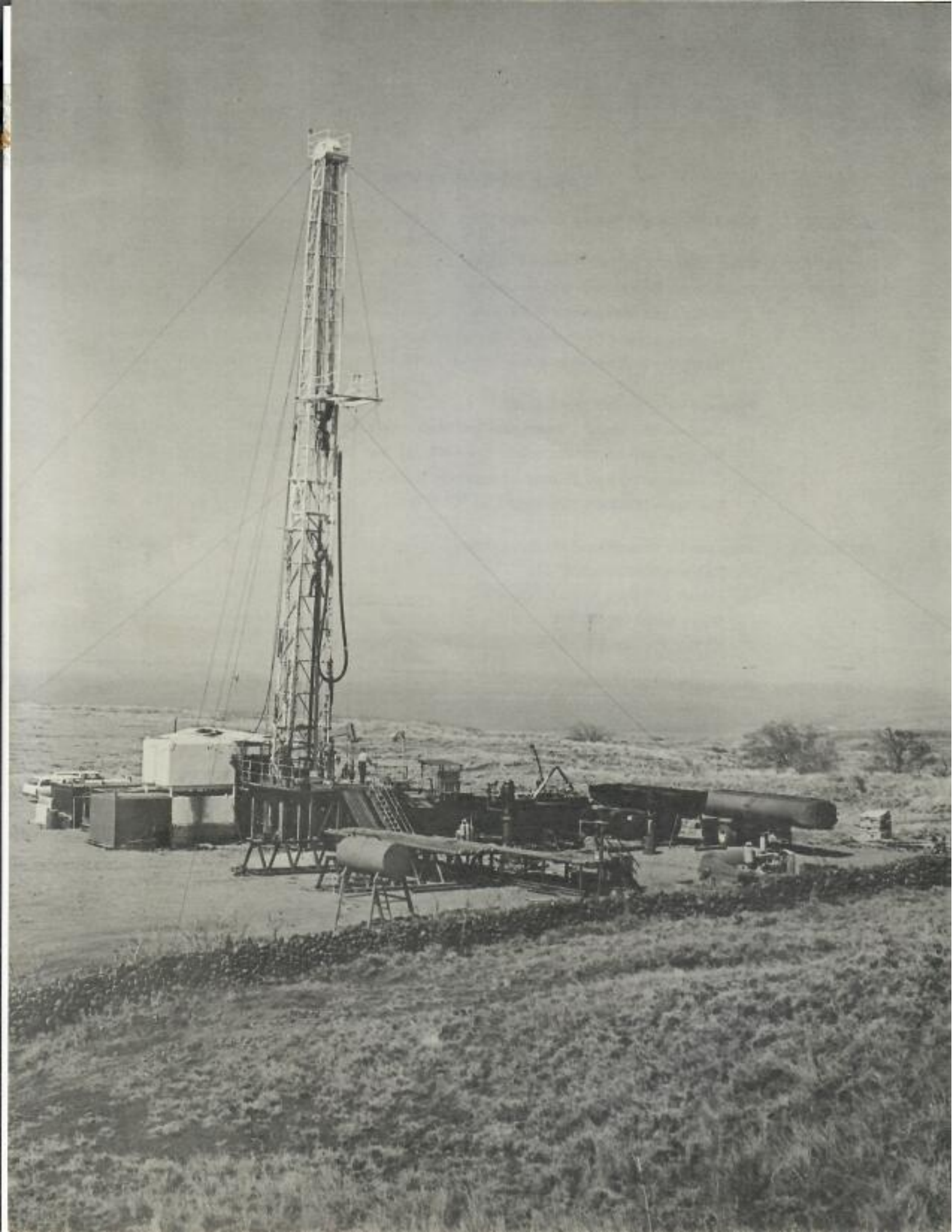


SECTION 1

BOARD OF LAND AND NATURAL RESOURCES

The Board of Land and Natural Resources is an executive board appointed by the Governor with the advice and consent of the State Senate to run the Department of Land and Natural Resources.

The Board is composed of six members, one from each land district and two at large.

The Governor selects a Chairman of the board from among its members; the chairman functions as the full-time salaried Executive Officer of the Department of Land and Natural Resources.

SECTION 2

DEPARTMENT OF LAND AND NATURAL RESOURCES

The Department of Land and Natural Resources manages, administers and exercises control over public lands, the water resources and minerals and all other interests therein and exercises such powers of disposition as may be authorized by law. The department also manages and administers the state parks, historical sites, forest, fish and game reserves of the State, the forest reserve, and other functions assigned to it by law.

The department is made up of six divisions plus an administrative staff which handles fiscal, personnel and planning matters. A brief description of each unit of the department follows:

DIVISION OF LAND MANAGEMENT

James Detor, Division Chief — 33 employees

This division is responsible for managing the public lands and the acquisition of non-public lands and other properties to service other State agencies.

DIVISION OF CONVEYANCES

Charles Neumann, Division Chief — 40 employees

This division receives and registers all land title documents, maps and other legal documents for the State. Official land records going back to the Great Mahele of 1848 can be viewed. This division is divided into two branches, the Land Court Registration and the Regular Registration.

DIVISION OF FORESTRY

Tom Tagawa, State Forester (retired)
William Sager, Acting State Forester — 95 employees

This division has the responsibility of managing the State's forest resources. The U.S. Forest Service Institute of Pacific Islands Forestry works closely with this division.

DIVISION OF FISH AND GAME

Michio Takata, Division Chief — 85 employees

This division is responsible for the development, management and preservation of the State's fish and wildlife resources. Aquaculture has become a key part of this program. This division works closely with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service.

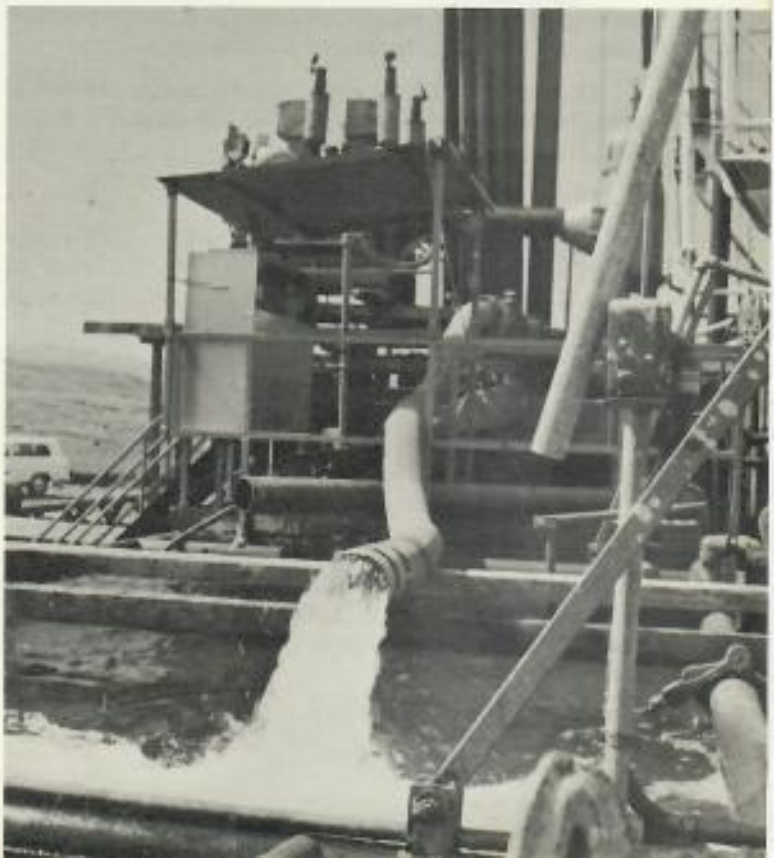
DIVISION OF STATE PARKS, OUTDOOR RECREATION AND HISTORICAL SITES

This division provides residents and visitors with opportunities for outdoor recreation and cultural enrichment. Increased emphasis is being placed on historical preservation. The Bureau of Outdoor Recreation (U.S. Department of Interior) provides funds for a significant portion of the State park program. Historical preservtion funds have also been made available by the Office of Historic Preservation.

DIVISION OF WATER AND LAND DEVELOPMENT

Robert T. Chuck, Division Chief — 54 employees

This division administers programs relating to inland waters, water development, flood control, and irrigation services. Support is provided to the 15 Soil and Water Conservation Districts throughout the State. In addition, professional engineering services is made available to the other divisions.



SECTION 3

PROGRAMS FOR GOVERNMENT-WIDE SUPPORT

PUBLIC LANDS MANAGEMENT (LNR 101)

The Division of Land Management is charged with the prudent management of the public lands of the State including the planning and administration of their acquisition, development, disposition and control in such a manner as to contribute to the greatest extent possible to the social, environmental and economic well-being of the people of Hawaii.

Land development projects have been curtailed somewhat due primarily to fiscal constraints. However, several projects are either completed, under construction, or will be under construction during FY 1977-78, these include:

Kurtistown School Houselots
Eight (8) lots were sold during fiscal year 1976-77.

Kukuihaele School Houselots
Five (5) lots have been turned over to Hawaii Housing Authority for development.

The Kealakehe Houselot Subdivision
Twenty-six (26) lots are now ready for disposition, either by sale or through the Hawaii Housing Authority.

The Nawiliwili Industrial Lots Subdivision
Twelve to fifteen lots will be put to bid in the third quarter of FY 1977-78. The off-site water line is presently being installed.

Sand Island Parkway, Increment II
This is scheduled for the near future.

Land Acquisition continues to be a major activity of this division as we acquire lands not only for this department but for other State and County agencies.

During FY 1976-77, the Division completed thirty-one (31) acquisitions totaling 1,543.759 acres at a cost of $14,314,566.00.

Major acquisitions included:

- Phase I, Malaekahana State Park ..... 73+ acres
- Sacred Falls State Park ..... 1,374+ acres
- Kaiaka State Park ..... 53+ acres
- Honowai Elementary School — formal possession ..... 6+ acres
- Radford H. S. Addition ..... 30,208 sq. ft.
- Paauilo Elementary & Intermediate School Addition ..... 29,671 sq. ft.
- Kahaluu County Park Expansion .... 3.1+ acres
- About 6 water tank sites in Kona

Land Management completed 178 dispositions during FY 1976-77. Fee sale of twenty-four (24) lots provided the Division with a one-time revenue of $470,105. New annual rental for leases and permits total $195,309.

Total revenues for FY 1976-77 generated by the Division totaled $5,578,068.

CONVEYANCES AND RECORDING (LNR 111)

The conveyances and recording program of the department is conducted primarily to protect the rights of individuals and organizations in land ownership. The division is the only agency within the State charged with the responsibility of carrying out this vital function; and this has contributed to the virtual elimination of error and confusion in land title registration in the State of Hawaii.

During the past year, 116,998 documents in the Regular Registration Branch and 52,629 documents in the Land Court Registration Branch were registered, an increase of more than 13% over the previous period. Additionally, 8006 Land Court Transfer Certificates of Title were issued, an increase of almost 5%. Program receipts increased 7.8% to a total of $831,473 for the period. The total value of taxable real estate transferred amounted to $1,771,333.00 during the fiscal year.

In 1975, the department installed an electronic data processing system, using punched cards for data entry, for more rapid and accurate indexing of registered documents and maps. Experience with the system during the past two years has been highly favorable, and the system is being up-graded from the punched card system to a key-to-disc data entry system in Jan. 1978. The new system is expected to reduce the time required for production of the daily document index from 36 hours, to 12 hours; and additionally will include a brief property description in the index. The improved system will provide more timely and effective service to professional abstractors and title searchers, and to the general public.

WATER DEVELOPMENT AND IRRIGATION SERVICES (LNR 141)

Beginning with the 1977-79 Fiscal Biennium, the Water Development Program (LNR 140) and the Irrigation Services (LNR 161) were combined into the Water Development and Irrigation Services Program (LNR 141).

The objective of this program is to develop and convey the water resources of the State for irrigation, municipal, industrial, hydropower, and other uses; to provide the necessary water for planned growth; and to support the planned programs designed to achieve the State's economic, environmental and social goals. It also provides irrigation services at selected sites to increase agricultural productivity.

Projects undertaken in this program area involved exploration for and development of water sources on the islands of Hawaii, Maui and Kauai; the construction of transmission and supply lines, storage tanks, booster pumping station and appurtenant facilities for the various County water systems; and economic and