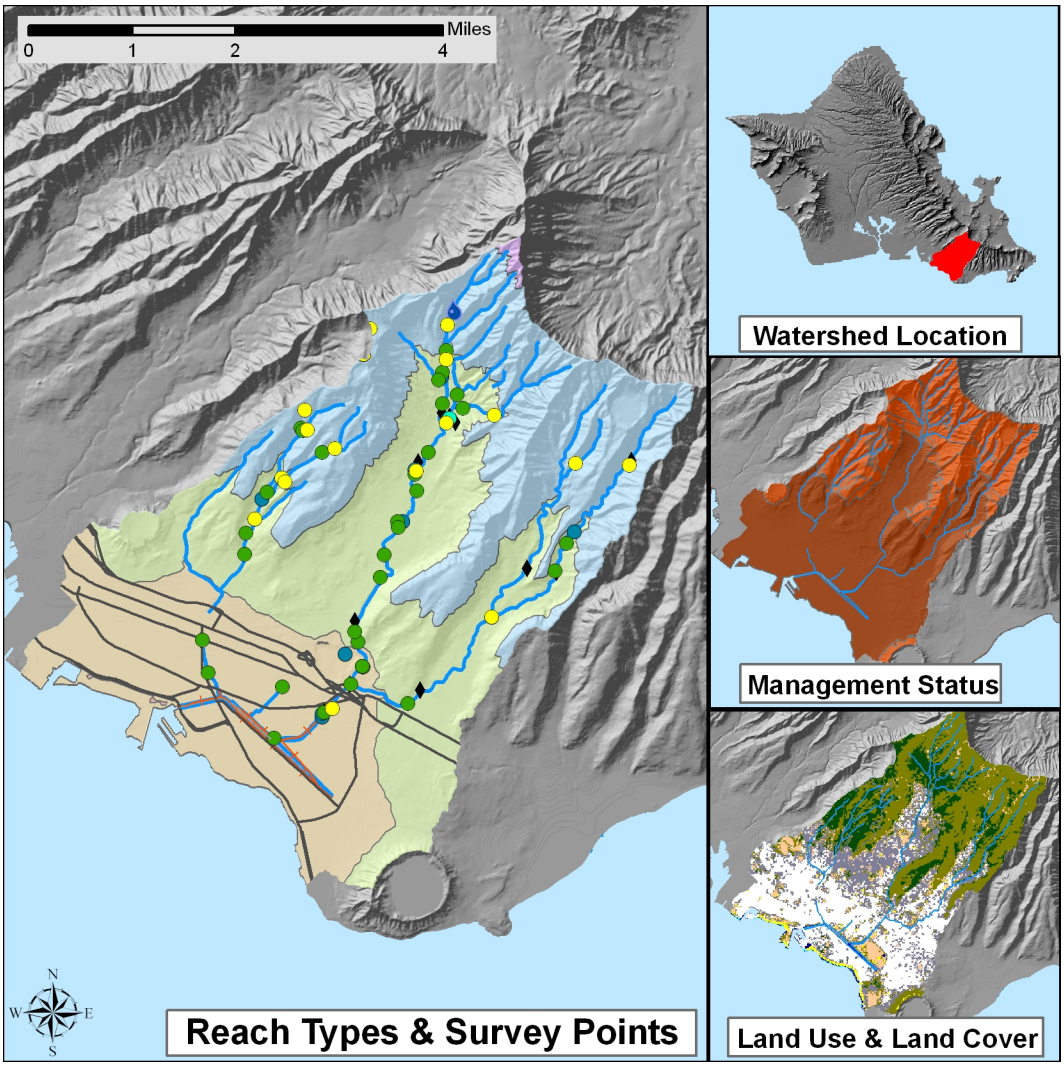
DAR Watershed Code: 33007

Ala Wai, O‘ahu



WATERSHED FEATURES

Ala Wai watershed occurs on the island of O‘ahu. The Hawaiian meaning of the name is “freshwater way”. The area of the watershed is 19 square mi (49.1 square km), with maximum elevation of 3051 ft (930 m). The watershed's DAR cluster code is not yet determined. The percent of the watershed in the different land use districts is as follows: 0.9% agricultural, 40% conservation, 0% rural, and 59.1% urban.

Land Stewardship: Percentage of the land in the watershed managed or controlled by the corresponding agency or entity. Note that this is not necessarily ownership.

Military	Federal	State	OHA	County	Nature Conservancy	Other Private
0.0	0.8	24.0	0.0	9.5	0.0	65.7

Land Management Status: Percentage of the watershed in the categories of biodiversity protection and management created by the Hawaii GAP program.

Permanent Biodiversity Protection	Managed for Multiple Uses	Protected but Unmanaged	Unprotected
0.0	0.0	38.1	61.9

Land Use: Areas of the various categories of land use. These data are based on NOAA C-CAP remote sensing project.

	Percent	Square mi	Square km
High Intensity Developed	27.6	5.23	13.54
Low Intensity Developed	18.7	3.55	9.21
Cultivated	0.0	0.00	0.00
Grassland	6.1	1.16	3.00
Scrub/Shrub	32.6	6.18	16.02
Evergreen Forest	12.9	2.45	6.35
Palustrine Forested	0.0	0.00	0.00
Palustrine Scrub/Shrub	0.0	0.00	0.00
Palustrine Emergent	0.0	0.00	0.00
Estuarine Forested	0.0	0.00	0.00
Bare Land	1.3	0.24	0.63
Unconsolidated Shoreline	0.1	0.03	0.07
Water	0.7	0.13	0.33
Unclassified	0.0	0.00	0.00

STREAM FEATURES

Ala Wai is a perennial stream. Total stream length is 30.4 mi (48.9 km). The terminal stream order is 3.

Reach Type Percentages: The percentage of the stream's channel length in each of the reach type categories.

Estuary	Lower	Middle	Upper	Headwaters
7.9	7.6	47.4	37.1	0.1

The following stream(s) occur in the watershed:

‘Aihualama	Ala Wai	canal	Kanahā	Kanealole
Lua‘alaea	Makiki	Mānoa	Maunalaha	Moleka
Nāniu‘apo	Pālolo	Pūkele	Wa‘aloa	Waiakeakua
Waihī	Wai‘ōma‘o			

BIOTIC SAMPLING EFFORT

Biotic samples were gathered in the following year(s):

1902	1912	1929	1930	1931	1933	1966
1969	1977	1979	1980	1983	1988	1990
1991	1996	1997	1999	2000	2001	2003
2006						

Distribution of Biotic Sampling: The number of survey locations that were sampled in the various reach types.

Survey type	Estuary	Lower	Middle	Upper	Headwaters
Damselfly Surveys	0	1	14	6	0
DAR General Surveys	0	1	1	0	0
DAR Rapid BioAssessment	0	2	4	0	0
Published Report	1	11	22	3	0
USGS Surveys	0	0	1	0	0

BIOTA INFORMATION

Species List

Native Species

Crustaceans	Amphipod sp.
	Atyoida bisulcata
	Macrobrachium grandimanus
Fish	*Awaous guamensis*
	Eleotris sandwicensis
	Kuhlia sandvicensis
	Kuhlia xenura
	Mugil cephalus
	Sicyopterus stimpsoni
	Sphyraena barracuda
	Stenogobius hawaiiensis
Snails	*Ferrissia sharpi*
	Neritina vespertina
Worms	*Namalycastis abiuma*
	Namalycastis sp.
	Oligochaete sp.
	Prostoma sp.

Native Species

Insects	Collembola sp.
	Empidid sp.
	Ephydrid sp.
	Eurynogaster obscura
	Forcipomyia sp.
	Hydroptila sp.
	Limonia sp.
	Megalagrion blackburni
	Megalagrion hawaiiense
	Megalagrion leptodemas
	Megalagrion nigrohamatum nigrolineatum
	Megalagrion oahuense
	Megalagrion oceanicum
	Microvelia vagans
	Orthocladius sp.
	Saldula exulans
	Scatella sp.
	Tipulid sp.

Introduced Species

Amphibians	*Bufo marinus*
	Rana catesbiana
	Rana rugosa
Clams	*Corbicula fluminea*
Crustaceans	*Caridina weberi*
	Chthamalus proteus
	Hyalella azteca
	Isopod sp.
	Macrobrachium lar
	Neocaridina denticulata
	Procambarus clarkii
	Scylla serrata
Fish	*Amphilophus citrinellus*

Introduced Species

Insects	*Cheumatopsyche analis*
	Cheumatopsyche pettiti
	Chironomid larvae
	Chrysotus longipalpus
	Condylostylus longicornis
	Cricotopus bicinctus
	Crocothemis servilia
	Enallagma civile
	Hydroptila potosina
	Ischnura posita
	Ischnura ramburi
	Limonia advena

	Ancistrus cf. temminckii	*Mesovelia amoena*
	Archocentrus sp.	*Orthemis ferruginea*
	Archocentrus nigrofasciatus	*Pantala flavescens*
	Clarias fuscus	*Parathroscinus sp.*
	Cyprinus carpio	*Pelastoneurus lugubris*
	Gambusia affinis	*Psychoda sp.*
	Hemichromis elongatus	*Thinophilus hardyi*
	Hypostomus sp.	*Toxorhynchites amboinensis*
	Hypostomus watwata	
	Hypsophrys nicaraguensis	
	Limia vittata	
	Micropterus dolomieu	
	Micropterus salmoides	
	Misgurnus anguillicaudatus	
	Poecilia latipinna	
	Poecilia reticulata	
	Poecilia sphenops	
	Poeciliid sp.	
	Sarotherodon melanotheron	
	Tilapia sp.	
	unidentified poeciliid	
	Xiphophorus helleri	
	Xiphophorus sp.	
Reptiles	*Chrysemys sp.*	
	Pelodiscus sinensis	
Snails	*Cipangopaludina chinensis*	
	Gastropod sp.	
	Melanoides tuberculata	
	Tarebia granifera	
	Thiara granifera	
	Thiarid sp.	
Worms	*Dugesia sp.*	

Species Distributions: Presence (P) of species in different stream reaches.

Scientific Name	Status	Estuary	Lower	Middle	Upper	Headwaters
Atyoida bisulcata	Endemic			P		
Macrobrachium grandimanus	Endemic		P			
Eleotris sandwicensis	Endemic		P	P		
Kuhlia xenura	Endemic		P			
Sicyopterus stimpsoni	Endemic			P		
Stenogobius hawaiiensis	Endemic		P	P		
Eurynogaster obscura	Endemic		P	P	P	
Megalagrion hawaiiense	Endemic			P		
Megalagrion leptodemas	Endemic			P		
Megalagrion nigrohamatum nigrolineatum	Endemic			P		

Megalagrion oahuense	Endemic				P		
Megalagrion oceanicum	Endemic				P		P
Microvelia vagans	Endemic						P
Orthocladius sp.	Endemic		P				
Saldula exulans	Endemic				P		
Ferrissia sharpi	Endemic				P	P	
Amphipod sp.	Indigenous		P				
Awaous guamensis	Indigenous		P		P		
Kuhlia sandvicensis	Indigenous		P				
Mugil cephalus	Indigenous		P				
Sphyraena barracuda	Indigenous	P	P				
Forcipomyia sp.	Indigenous				P		
Limonia sp.	Indigenous				P		
Scatella sp.	Indigenous				P		
Namalycastis sp.	Indigenous		P		P		
Bufo marinus	Introduced		P		P		
Rana catesbiana	Introduced						P
Rana rugosa	Introduced				P		P
Corbicula fluminea	Introduced		P		P		
Chthamalus proteus	Introduced	P	P				P
Hyalella azteca	Introduced		P		P		
Isopod sp.	Introduced				P		
Macrobrachium lar	Introduced				P		
Neocaridina denticulata	Introduced		P		P		P
Procambarus clarkii	Introduced		P		P		
Scylla serrata	Introduced	P					
Amphilophus citrinellus	Introduced		P		P		
Ancistrus cf. temminckii	Introduced		P		P		
Archocentrus sp.	Introduced		P				
Archocentrus nigrofasciatus	Introduced		P		P		
Clarias fuscus	Introduced				P		
Cyprinus carpio	Introduced		P		P		
Gambusia affinis	Introduced	P	P		P		
Hemichromis elongatus	Introduced				P		
Hypostomus sp.	Introduced				P		
Hypostomus watwata	Introduced		P		P		
Hypsophrys nicaraguensis	Introduced		P				
Micropterus dolomieu	Introduced		P	P			
Micropterus salmoides	Introduced				P		
Misgurnus anguillicaudatus	Introduced				P		
Poecilia latipinna	Introduced				P		
Poecilia reticulata	Introduced		P		P		P

Poecilia sphenops	Introduced		P		
Poeciliid sp.	Introduced		P	P	
Sarotherodon melanotheron	Introduced		P		
Tilapia sp.	Introduced	P	P	P	
unidentified poeciliid	Introduced	P	P	P	
Xiphophorus helleri	Introduced		P	P	P
Xiphophorus sp.	Introduced		P	P	
Cheumatopsyche analis	Introduced			P	
Chironomid larvae	Introduced		P	P	
Chrysotus longipalpus	Introduced			P	
Condylostylus longicornis	Introduced		P		P
Cricotopus bicinctus	Introduced		P	P	
Crocothemis servilia	Introduced		P		
Enallagma civile	Introduced			P	
Ischnura posita	Introduced			P	
Ischnura ramburi	Introduced		P	P	
Limonia advena	Introduced			P	
Mesovelia amoena	Introduced			P	
Orthemis ferruginea	Introduced		P		
Pantala flavescens	Introduced		P	P	
Parathroscinus sp.	Introduced		P		
Pelastoneurus lugubris	Introduced		P		
Thinophilus hardyi	Introduced		P		
Toxorhynchites amboinensis	Introduced			P	
Chrysemys sp.	Introduced			P	
Pelodiscus sinensis	Introduced			P	
Melanoides tuberculata	Introduced		P	P	P
Tarebia granifera	Introduced		P	P	
Thiarid sp.	Introduced		P		
Dugesia sp.	Introduced		P	P	P
Empidid sp.	Undetermined		P	P	
Ephydrid sp.	Undetermined			P	
Hydroptila sp.	Undetermined		P		
Tipulid sp.	Undetermined			P	
Oligochaete sp.	Undetermined		P	P	

HISTORIC RANKINGS

Historic Rankings: These are rankings of streams from historical studies. "Yes" means the stream was considered worthy of protection by that method. Some methods include non-biotic data in their determination. See Atlas Key for details.

Multi-Attribute Prioritization of Streams - Potential Heritage Streams (1998): No

Hawaii Stream Assessment Rank (1990): not ranked

U.S. Fish and Wildlife Service High Quality Stream (1988): No

The Nature Conservancy- Priority Aquatic Sites (1985): No

National Park Service - Nationwide Rivers Inventory (1982): No

Current DAR Decision Rule Status: The following criteria are used by DAR to consider the biotic importance of streams. "Yes" means that watershed has that quality.

Native Insect Diversity > 19 spp.	Native Macrofauna Diversity > 5 spp.	Absence of Priority 1 Introduced
No	Yes	No
Abundance of Any Native Species	**Presence of Candidate Endangered Species**	**Endangered Newcomb's Snail Habitat**
Yes	Yes	No

CURRENT WATERSHED AND STREAM RATINGS

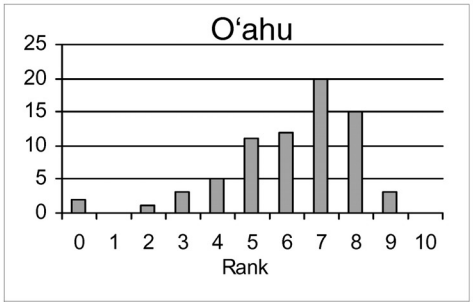
The current watershed and stream ratings are based on the data contained in the DAR Aquatic Surveys Database. The ratings provide the score for the individual watershed or stream, the distribution of ratings for that island, and the distribution of ratings statewide. This allows a better understanding of the meaning of a particular ranking and how it compares to other streams. The ratings are standardized to range from 0 to 10 (0 is lowest and 10 is highest rating) for each variable and the totals are also standardized so that the rating is not the average of each component rating. These ratings are subject to change as more data are entered into the DAR Aquatic Surveys Database and can be automatically recalculated as the data improve. In addition to the ratings, we have also provided an estimate of the confidence level of the ratings. This is called rating strength. The higher the rating strength the more likely the data and rankings represent the actual condition of the watershed, stream, and aquatic biota.

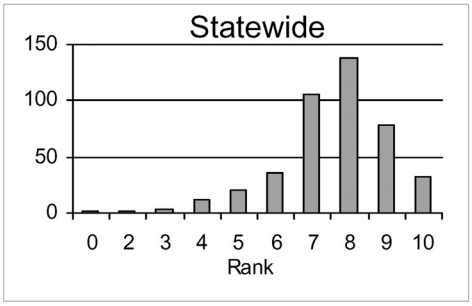
WATERSHED RATING: Ala Wai, O‘ahu

Land Cover Rating: Rating is based on a scoring sytem where in general forested lands score positively and developed lands score negatively.

Watershed Rating

3

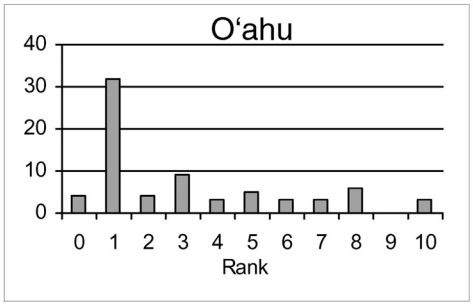


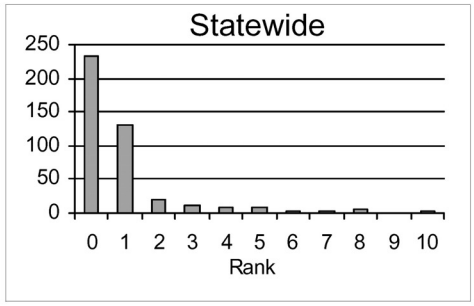


Shallow Waters Rating: Rating is based on a combination of the extent of estuarine and shallow marine areas associated with the watershed and stream.

Watershed Rating

7

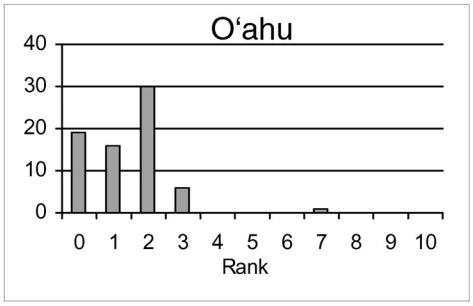


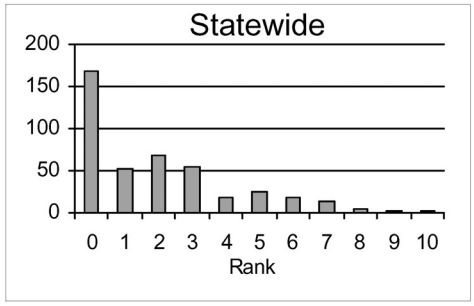


Stewardship Rating: Rating is based on a scoring system where higher levels of land and biodiversity protection within the watershed score positively.

Watershed Rating

1



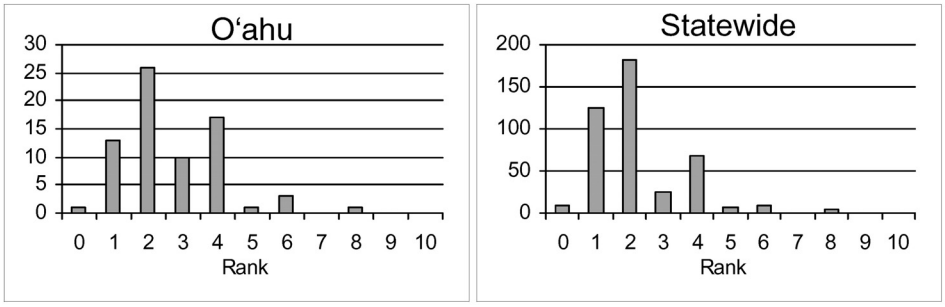


WATERSHED RATING (Cont): Ala Wai, O‘ahu

Size Rating: Rating is based on the watershed area and total stream length. Larger watersheds and streams score more positively.

Watershed Rating

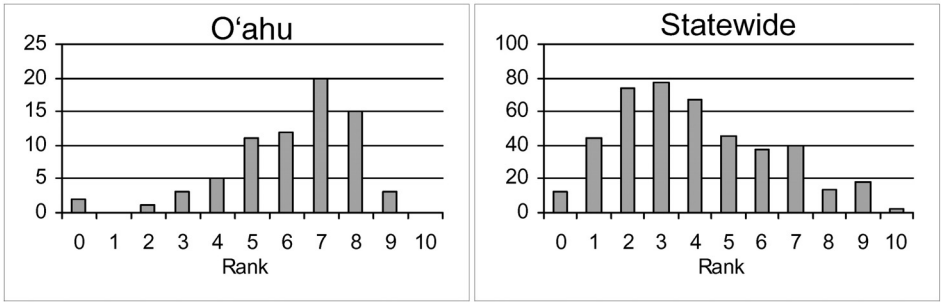
4



Wetness Rating: Rating is based on the average annual rainfall within the watershed. Higher rainfall totals score more positively.

Watershed Rating

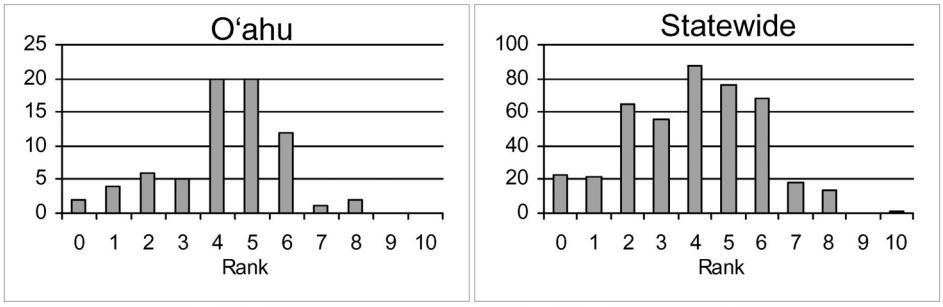
3



Reach Diversity Rating: Rating is based on the types and amounts of different stream reaches available in the watershed. More area in different reach types score more positively.

Watershed Rating

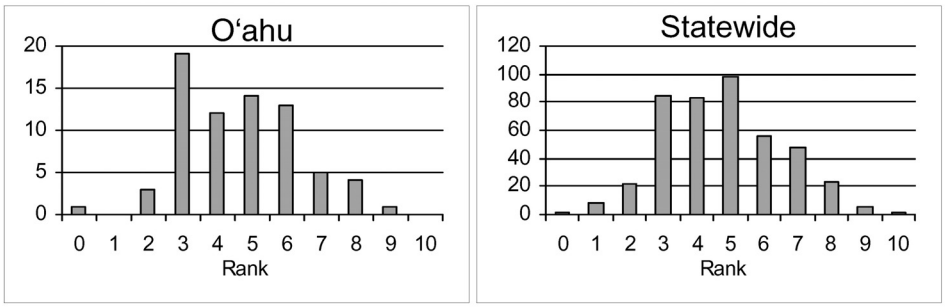
8



Total Watershed Rating: Rating is based on combination of Land Cover Rating, Shallow Waters Rating, Stewardship Rating, Size Rating, Wetness Rating, and Reach Diversity Rating.

Watershed Rating

6

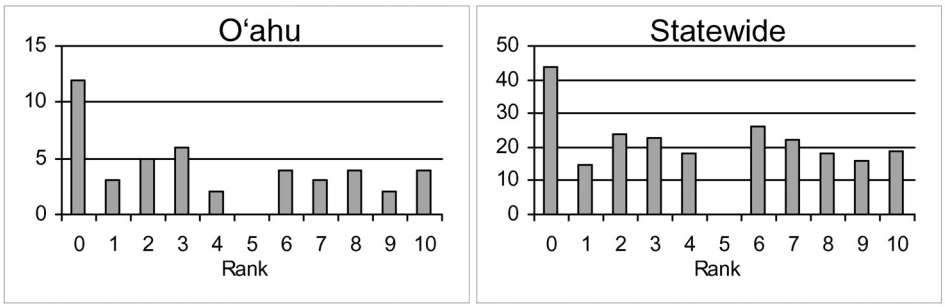


BIOLOGICAL RATING: Ala Wai, O‘ahu

Native Species Rating: Rating is based on the number of native species observed in the watershed.

Stream Rating

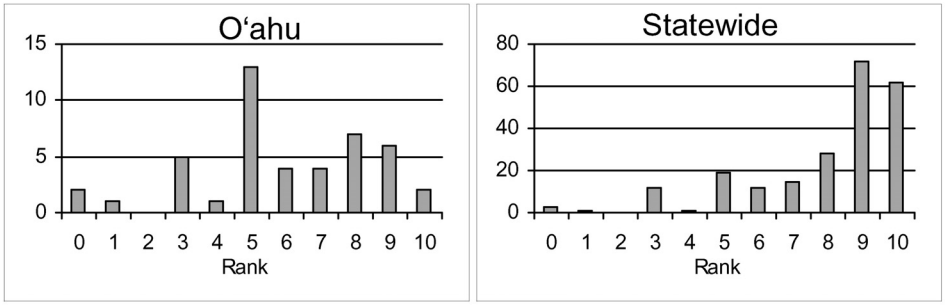
8



Introduced Genera Rating: Rating is based on the number of introduced genera observed in the watershed.

Stream Rating

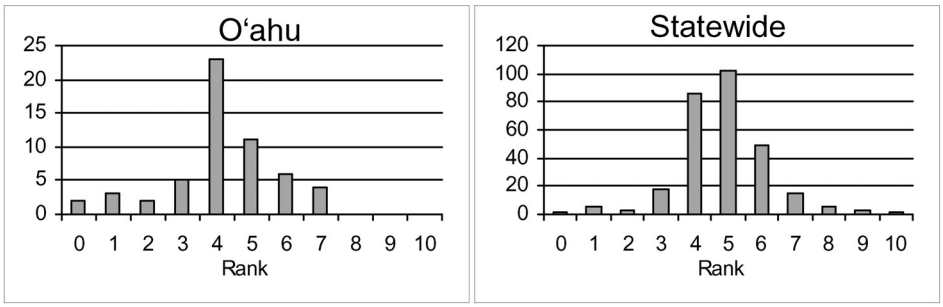
0



All Species' Score Rating: Rating is based on the Hawaii Stream Assessment scoring system where native species score positively and introduced species score negatively.

Stream Rating

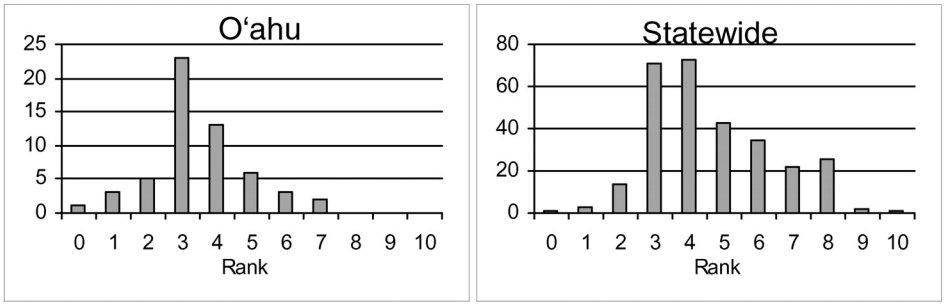
0



Total Biological Rating: Rating is the combination of the Native Species Rating, Introduced Genera Rating, and the All Species' Score Rating.

Stream Rating

1

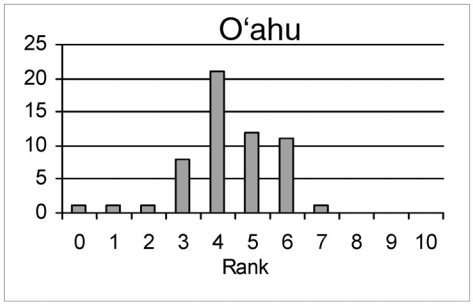


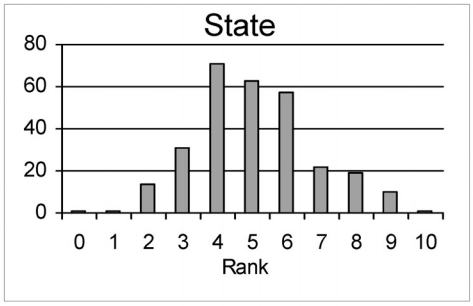
OVERALL RATING: Ala Wai, O‘ahu

Overall Rating: Rating is a combination of the Total Watershed Rating and the Total Biological Rating.

Watershed Rating

4



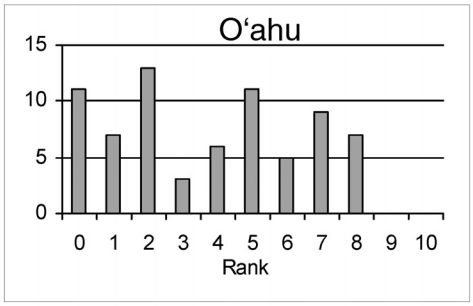


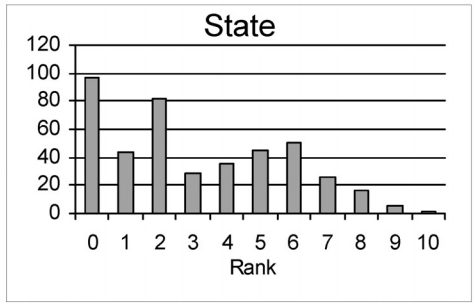
RATING STRENGTH: Ala Wai, O‘ahu

Rating Strength: Represents an estimate of the overall study effort in the stream and is a combination of the number of studies, number of different reaches surveyed, and the number of different survey types.

Information Rating

8





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