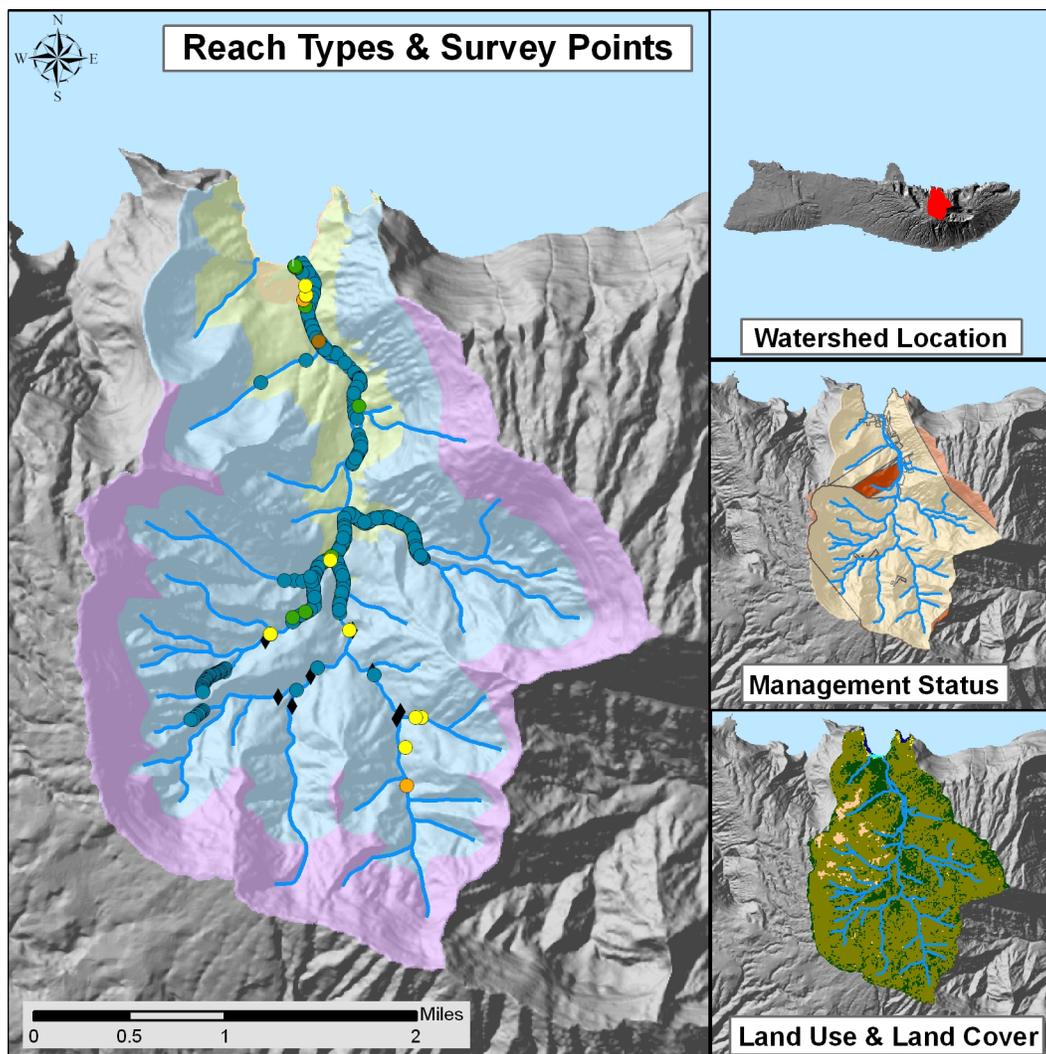


Pelekunu, Moloka'i



WATERSHED FEATURES

Pelekunu watershed occurs on the island of Moloka'i. The Hawaiian meaning of the name is "smelly (for lack of sunshine)". The area of the watershed is 7.5 square mi (19.5 square km), with maximum elevation of 4875 ft (1486 m). The watershed's DAR cluster code is 4, meaning that the watershed is medium size, steep in the upper watershed, and with embayment. The percent of the watershed in the different land use districts is as follows: 0% agricultural, 100% conservation, 0% rural, and 0% 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.

<u>Military</u>	<u>Federal</u>	<u>State</u>	<u>OHA</u>	<u>County</u>	<u>Nature Conservancy</u>	<u>Other</u>	<u>Private</u>
0.0	0.0	8.1	0.0	0.0	91.6		0.3

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

Permanent Biodiversity <u>Protection</u>	Managed for Multiple <u>Uses</u>	Protected but <u>Unmanaged</u>	<u>Unprotected</u>
91.6	5.1	3.3	0.0

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

	<u>Percent</u>	<u>Square mi</u>	<u>Square km</u>
High Intensity Developed	0.0	0.00	0.00
Low Intensity Developed	0.0	0.00	0.00
Cultivated	0.0	0.00	0.00
Grassland	2.4	0.18	0.47
Scrub/Shrub	74.2	5.59	14.49
Evergreen Forest	22.8	1.72	4.45
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	0.2	0.02	0.04
Unconsolidated Shoreline	0.1	0.01	0.02
Water	0.3	0.02	0.05
Unclassified	0.0	0.00	0.00

STREAM FEATURES

Pelekunu is a perennial stream. Total stream length is 21.4 mi (34.5 km). The terminal stream order is 4.

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

<u>Estuary</u>	<u>Lower</u>	<u>Middle</u>	<u>Upper</u>	<u>Headwaters</u>
0.0	0.0	26.7	69.1	4.2

The following stream(s) occur in the watershed:

Ka'ili'ili	Kapuhi	Kawai Iki	Kawailena	Kawainui
Kawaipoko	Lanipuni	Pelekunu	Pilipililau	

BIOTIC SAMPLING EFFORT

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

1956	1966	1979	1980	1986	1987	1989
1990	1991	1992	1995	1997	1999	2000
2001	2002	2005				

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

<u>Survey type</u>	<u>Estuary</u>	<u>Lower</u>	<u>Middle</u>	<u>Upper</u>	<u>Headwaters</u>
Damselfly Surveys	0	6	2	7	0
DAR General Surveys	0	4	5	3	0
DAR Point Quadrat	0	41	373	60	0
HDFG	0	1	0	1	0
Published Report	0	5	2	2	0
Unpublished Report	0	0	1	0	0

BIOTA INFORMATION**Species List****Native Species****Crustaceans**

Atyoida bisulcata
Macrobrachium grandimanus

Fish

Awaous guamensis
Eleotris sandwicensis
 Gobiid sp.
Kuhlia sandwicensis
Kuhlia xenura
Lentipes concolor
Mugil cephalus
Sicyopterus stimpsoni
Stenogobius hawaiiensis

Snails

Clithon cariosus
Erinna aulacospira
Ferrissia sharpi
Neritina granosa

Native Species**Insects**

Anax junius
Anax sp.
Anax strenuus
Campsicnemus ridiculus
Campsicnemus sp.
Chironomus hawaiiensis
Dasyhelea hawaiiensis
Dasyhelea platychaeta
Dasyhelea sp.
Dolichopodid sp.
 Ephydrid sp.
Eurynogaster sp.
Hydroptila sp.
Hyposmocoma sp.
Limonia jacobus
Megalagrion blackburni
Megalagrion calliphya
Megalagrion hawaiiense
Megalagrion nigrohamatum
nigrohamatum
Megalagrion pacificum
Megalagrion sp.
Megalagrion xanthomelas
Microvelia vagans
Notiphilia insularis
Procanacae acuminata
Procanace confusa
Procanace sp.
Procanace wirthi
Pseudosmittia paraconjugata
Saldula exulans
Scatella cilipes

Scatella clavipes
Scatella hawaiiensis
Scatella sp.
Scatella warreni
Sigmataneurum sp.
Telmatogeton torrenticola
Thambemyia acrosticalis
 Tipulid sp.

Introduced Species

Crustaceans *Macrobrachium lar*
Snails *Melania sp.*
Melanoides tuberculata

Introduced Species

Insects *Cheumatopsyche analis*
Cheumatopsyche pettiti
 Chironomid larvae
Chrysotus longipalpus
Condyllostylus longicornis
Cricotopus bicinctus
Dolichopus exsul
Donaceus sp.
Erioptera bicornifer
Ischnura posita
Ischnura ramburi
Limonia advena
Mesovelgia amoena
Orthemis ferruginea
Pantala flavescens
Paraphrosylus
Telmatogeton japonicus

Species Size Data: Species size (inches) observed in DAR Point Quadrat Surveys.

<u>Scientific Name</u>	<u>Status</u>	<u>Minimum Size</u>	<u>Maximum Size</u>	<u>Average Size</u>
<i>Atyoida bisulcata</i>	Endemic	0.5	1.25	1.0
<i>Macrobrachium lar</i>	Introduced	0.5	7	3.2
<i>Eleotris sandwicensis</i>	Endemic	1	8	2.9
<i>Kuhlia xenura</i>	Endemic	0.5	5	1.5
<i>Lentipes concolor</i>	Endemic	0.3	5	1.6
<i>Sicyopterus stimpsoni</i>	Endemic	0.5	7	2.4
<i>Stenogobius hawaiiensis</i>	Endemic	0.5	2.5	1.3
<i>Awaous guamensis</i>	Indigenous	0.5	12	3.1
Gobiid sp.	Indigenous	0.5	0.75	0.6
<i>Neritina granosa</i>	Endemic	0.25	2.25	1.2
<i>Melania sp.</i>	Introduced	0.75	0.75	0.8

Average Density: The densities (#/square yard) for species observed in DAR Point Quadrat Surveys averaged over all sample dates in each reach type.

<u>Scientific Name</u>	<u>Status</u>	<u>Estuary</u>	<u>Low</u>	<u>Mid</u>	<u>Upper</u>	<u>Headwaters</u>
<i>Atyoida bisulcata</i>	Endemic			0.01	19.3	
<i>Eleotris sandwicensis</i>	Endemic		0.16	0.13	0.11	

<i>Kuhlia xenura</i>	Endemic	1.43	0.13	
<i>Lentipes concolor</i>	Endemic	0.12	1.79	1.5
<i>Neritina granosa</i>	Endemic	2.27	1.85	2.1
<i>Sicyopterus stimpsoni</i>	Endemic	2.4	3.15	0.27
<i>Stenogobius hawaiiensis</i>	Endemic	0.19	0.16	
<i>Awaous guamensis</i>	Indigenous	1.71	1.36	2.1
Gobiid sp.	Indigenous		0.02	
<i>Macrobrachium lar</i>	Introduced	0.16	1.21	1.04
<i>Melania sp.</i>	Introduced		0.01	

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

<u>Scientific Name</u>	<u>Status</u>	<u>Estuary</u>	<u>Lower</u>	<u>Middle</u>	<u>Upper</u>	<u>Headwaters</u>
<i>Atyoida bisulcata</i>	Endemic		P	P	P	
<i>Macrobrachium grandimanus</i>	Endemic		P			
<i>Eleotris sandwicensis</i>	Endemic		P	P	P	
<i>Kuhlia xenura</i>	Endemic		P	P		
<i>Lentipes concolor</i>	Endemic		P	P	P	
<i>Sicyopterus stimpsoni</i>	Endemic		P	P	P	
<i>Stenogobius hawaiiensis</i>	Endemic		P	P		
<i>Anax strenuus</i>	Endemic		P	P	P	
<i>Campsicnemus ridiculus</i>	Endemic		P		P	
<i>Hyposmocoma sp</i>	Endemic		P	P		
<i>Megalagrion blackburni</i>	Endemic		P	P	P	
<i>Megalagrion hawaiiense</i>	Endemic		P	P	P	
<i>Megalagrion nigrohamatum nigrohamatum</i>	Endemic		P	P		
<i>Megalagrion pacificum</i>	Endemic		P	P	P	
<i>Megalagrion sp.</i>	Endemic		P			
<i>Megalagrion xanthomelas</i>	Endemic		P	P		
<i>Microvelia vagans</i>	Endemic			P		
<i>Procanacae acuminata</i>	Endemic		P	P	P	
<i>Saldula exulans</i>	Endemic		P	P	P	
<i>Scatella clavipes</i>	Endemic		P	P	P	
<i>Telmatogeton torrenticola</i>	Endemic		P	P	P	
<i>Neritina granosa</i>	Endemic		P	P	P	
<i>Awaous guamensis</i>	Indigenous		P	P	P	
Gobiid sp.	Indigenous		P	P	P	
<i>Kuhlia sandwicensis</i>	Indigenous		P			
<i>Mugil cephalus</i>	Indigenous		P			
<i>Anax junius</i>	Indigenous		P			
<i>Anax sp.</i>	Indigenous				P	
<i>Campsicnemus sp.</i>	Indigenous			P		
<i>Procanace sp.</i>	Indigenous			P		

<i>Macrobrachium lar</i>	Introduced	P	P	P
<i>Cheumatopsyche analis</i>	Introduced	P	P	
<i>Cheumatopsyche pettiti</i>	Introduced	P	P	P
Chironomid larvae	Introduced	P		
<i>Ischnura posita</i>	Introduced	P		
<i>Ischnura ramburi</i>	Introduced	P		
<i>Limonia advena</i>	Introduced	P	P	P
<i>Mesovelgia amoena</i>	Introduced		P	
<i>Orthemis ferruginea</i>	Introduced		P	
<i>Pantala flavescens</i>	Introduced	P	P	
<i>Paraphrosylus</i>	Introduced		P	
<i>Melania sp.</i>	Introduced		P	P
<i>Dolichopodid sp.</i>	Undetermined	P		
Ephydrid sp.	Undetermined	P		
<i>Hydroptila sp.</i>	Undetermined	P	P	P
Tipulid sp.	Undetermined	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): Yes

Hawaii Stream Assessment Rank (1990): Outstanding

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

The Nature Conservancy- Priority Aquatic Sites (1985): Yes

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.

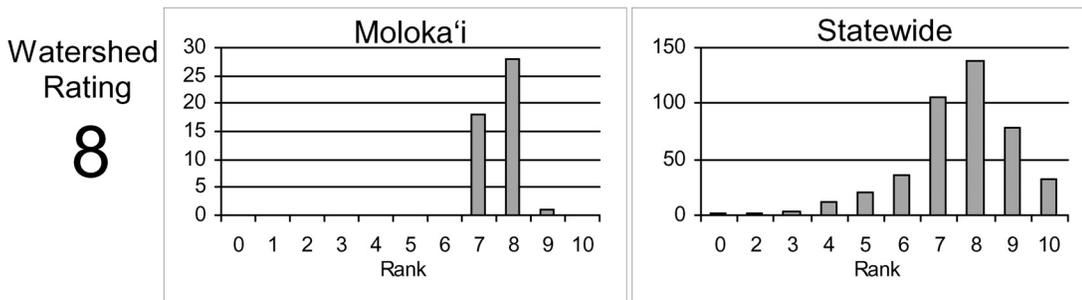
Native Insect Diversity <u>> 19 spp.</u>	Native Macrofauna <u>Diversity > 5 spp.</u>	Absence of Priority 1 <u>Introduced</u>
Yes	Yes	Yes
Abundance of Any <u>Native Species</u>	Presence of Candidate <u>Endangered Species</u>	Endangered Newcomb's <u>Snail Habitat</u>
No	Yes	No

CURRENT WATERSHED AND STREAM RATINGS

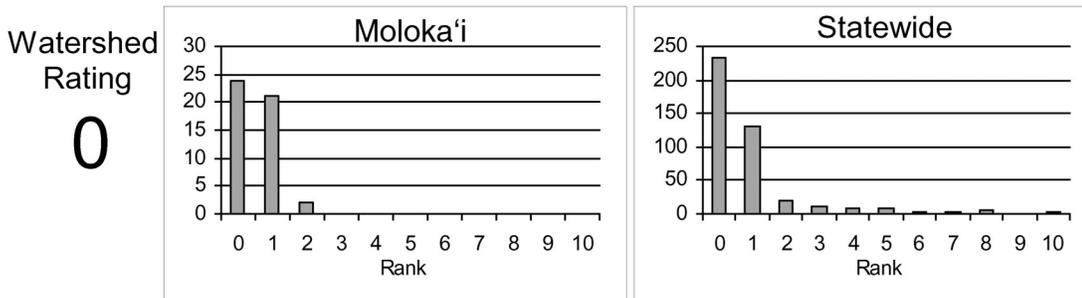
The current watershed and stream ratings are based on the data contained in the DAR Aquatic Surveys Database. The ratings provide the score for the individual watershed or stream, the distribution of ratings for that island, and the distribution of ratings statewide. This allows a better understanding 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: Pelekunu, Moloka'i

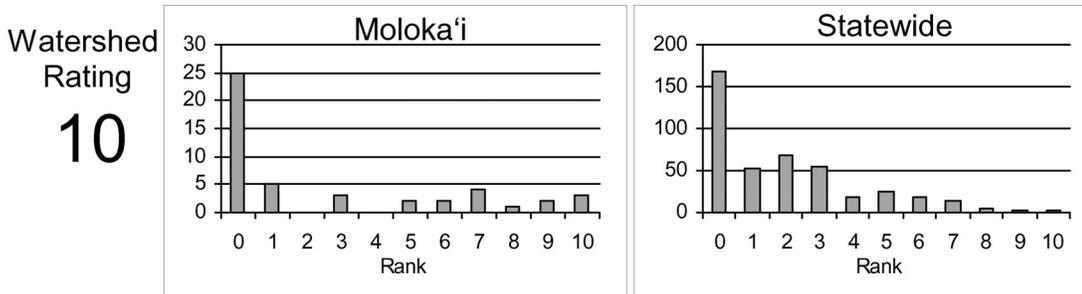
Land Cover Rating: Rating is based on a scoring system where in general forested lands score positively and developed lands score negatively.



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

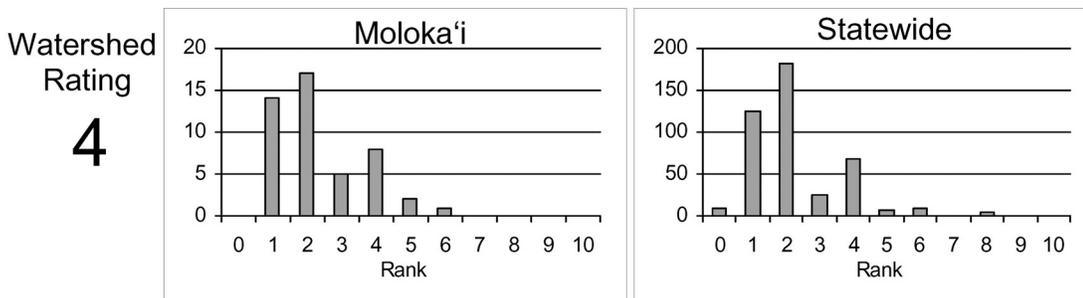


Stewardship Rating: Rating is based on a scoring system where higher levels of land and biodiversity protection within the watershed score positively.

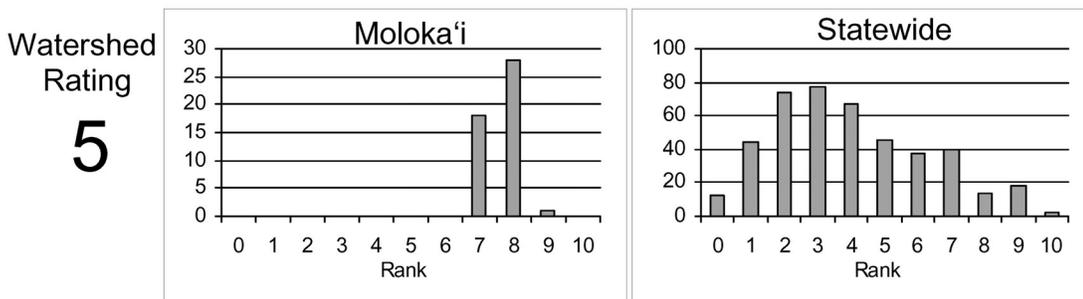


WATERSHED RATING (Cont): Pelekunu, Moloka'i

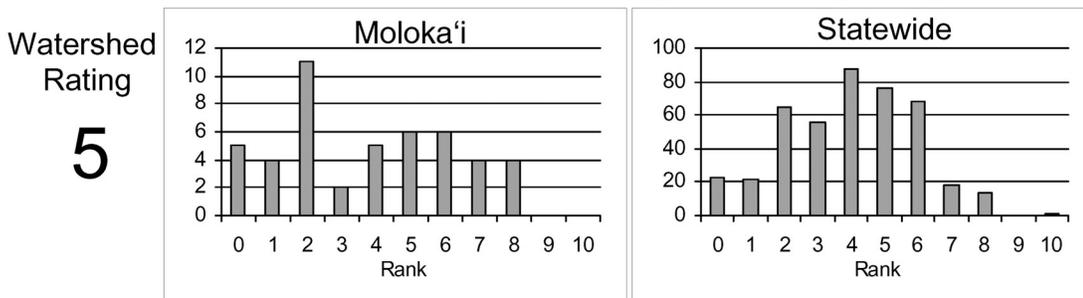
Size Rating: Rating is based on the watershed area and total stream length. Larger watersheds and streams score more positively.



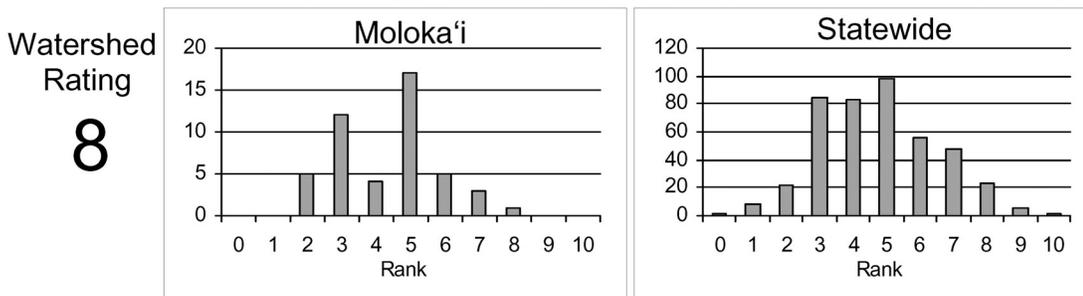
Wetness Rating: Rating is based on the average annual rainfall within the watershed. Higher rainfall totals score more positively.



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.



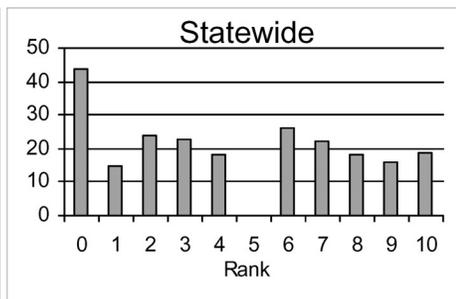
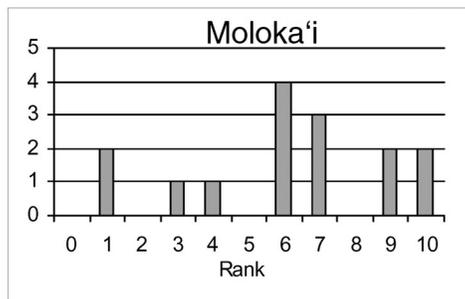
Total Watershed Rating: Rating is based on combination of Land Cover Rating, Shallow Waters Rating, Stewardship Rating, Size Rating, Wetness Rating, and Reach Diversity Rating.



BIOLOGICAL RATING: Pelekunu, Moloka'i

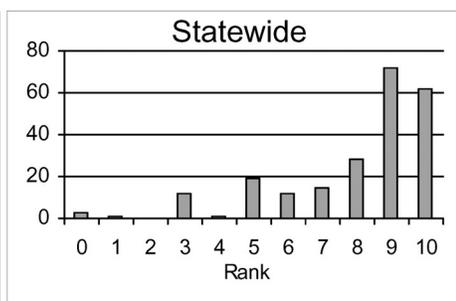
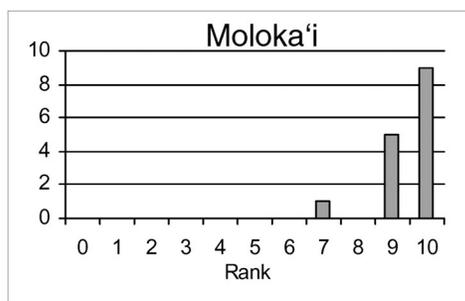
Native Species Rating: Rating is based on the number of native species observed in the watershed.

Stream Rating
10



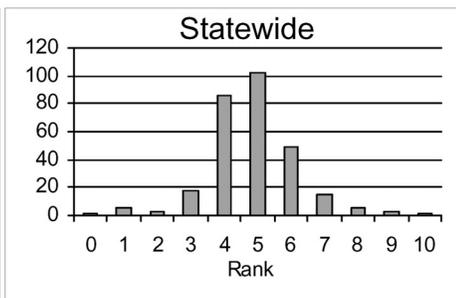
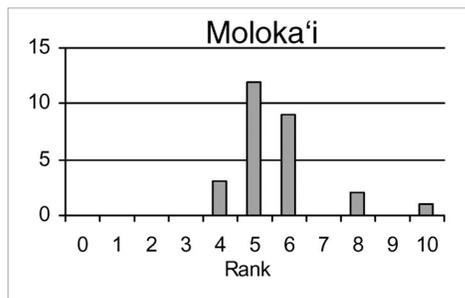
Introduced Genera Rating: Rating is based on the number of introduced genera observed in the watershed.

Stream Rating
10



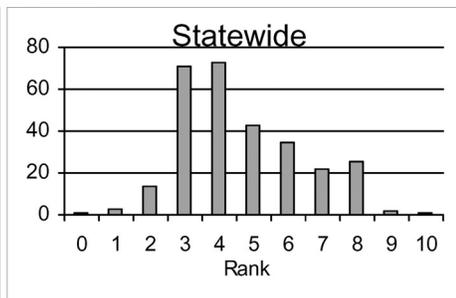
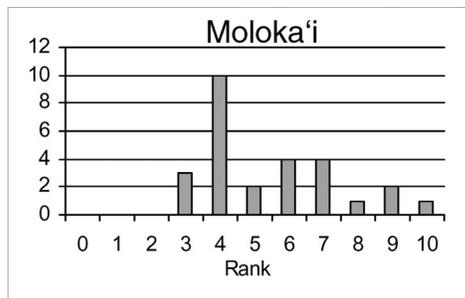
All Species' Score Rating: Rating is based on the Hawaii Stream Assessment scoring system where native species score positively and introduced species score negatively.

Stream Rating
10



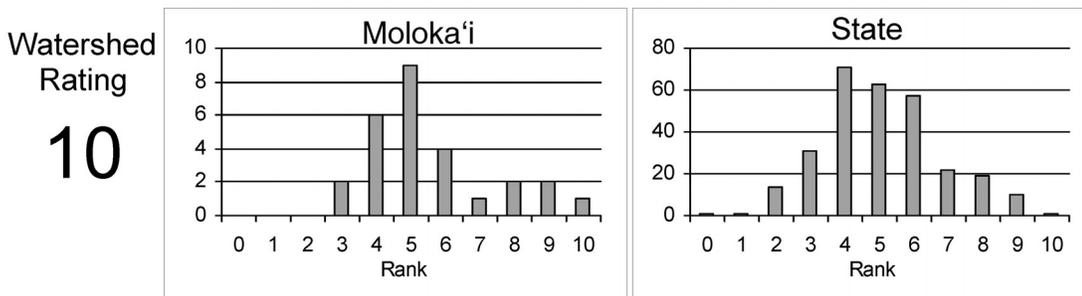
Total Biological Rating: Rating is the combination of the Native Species Rating, Introduced Genera Rating, and the All Species' Score Rating.

Stream Rating
10



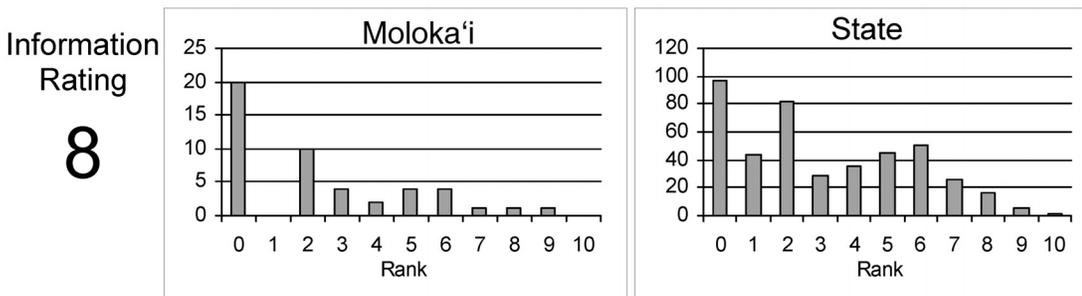
OVERALL RATING: Pelekunu, Moloka'i

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



RATING STRENGTH: Pelekunu, Moloka'i

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.



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