

Cattle Islands Vegetation Overview

Non-Native Species Survey and Vegetation Highlights



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Cover Photos:

Dry lake bed on Wosnesenski Island.
White water crowfoot (*Ranunculus aquatilis*) on Wosnesenski Island.
Alpine rock jasmine (*Androsace chamaejasme*) on Wosnesenski Island.
Sitka spruce (*Picea sitchensis*) and the old ranch house site on Simeonof Island.
Oxeye daisy (*Leucanthemum vulgare*) in fence debris on Simeonof Island.
Narrowleaf saw-wort (*Saussurea angustifolia*) on Wosnesenski Island.
Beach on eastern shore of Chirikof Island.
Wosnesenski Island Landscape.

Botany Lab on the R/V Tiglax.



Chirikof Island

Non-Native Species

Eleven non-native species have been noted on Chirikof Island, including several graminoid species (perennial ryegrass, annual bluegrass, and Kentucky bluegrass). Additional species include big chickweed, hairy catsear, common plantain, common sheep sorrel, birdseye pearlwort, common chickweed, common dandelion, and thymeleaf speedwell (see Tables 1 and 2 for a complete list).

An overview map of all islands visited is presented in Figure 19; Chirikof Island survey sites are shown in Figure 23.

Graminoids were likely introduced through cattle, feed, footwear, or gear. Kentucky bluegrass was well-distributed throughout the island. Linear spread is evident between hummock spaces in uplands along cattle tracks. Scattered distribution was also evident in upland mixed forb communities as well as within low shrub (crowberry) hummocks. Control or eradication would be difficult given the advanced distribution into most areas of the island. Annual bluegrass and perennial ryegrass distribution is limited primarily to formerly inhabited areas.

Most of the broadleaf non-natives identified are known to be innocuous and common to the state of Alaska. Common sheep sorrel, common plantain, common chickweed, common dandelion, and thymeleaf speedwell are frequently found in locations with human visitation or use. On Chirikof Island, distribution was mainly confined to disturbed areas, eroded areas inland from the shorelines, or in a few scattered points along cattle trails.



Figure 2. Cattle impacts to beach vegetation.



Figure 1. Typical habitat of big chickweed and Kentucky bluegrass - disturbed areas along cattle tracks.

Of the less common invaders, hairy catsear was only found in one location on a prior survey. Where invasive, this species is common to meadows and paddocks, and was likely introduced during cattle operations.

Birdseye pearlwort thrives on moist open soil in disturbed areas. This species, usually introduced by contaminated footwear or gear, is considered a problem in remote islands in eastern Canada where it has displaced native vegetation by rapidly expanding into thick monoculture mats. On Chirikof Island,

distribution appeared to be sparse and limited to cattle-disturbed areas on the eastern side of the island.

Cattle Use

Cattle were brought to the island in the late 1800s although precise dates are unknown and functionally abandoned after some use of the island for military purposes by 1949 (Rivers 2000). Genetics analysis of cattle did not definitely identify cattle origins, as several introductions took place over time. Genetically, the Chirikof cattle appear to be distinct and not specific to any of eleven major breeds in North America (NRCS 2014, MacNeil 2007).

Cattle use was evident in most areas of the island, except in higher elevations. Cattle grazed primarily on beach ryegrass (*Leymus mollis*), Lyngbye's sedge (*Carex lyngbyei*), mud sedge (*Carex magellanica*), bluejoint reedgrass (*Calamagrostis canadensis*), and cowparsnip (*Heracleum maximum*).

Beach vegetation was moderately to severely impacted on the northwestern part of the island. Large expanses of sandy soils combined with cattle use over time have caused extensive areas of advanced erosion and dune formation.

Cattle tracks were evident throughout much of the area surveyed. Low and slope wetlands were impacted by grazing on sedge and trampling. Streams and waterways show degradation by excessive cattle use, including increased turbidity, channel widening, erosion, and vegetation displacement. Rivulets and drainages were more deeply incised across and down inland hillslopes due to cattle use, although covered by vegetation. While current-season grazing pressure was within prescribed grazing standards, cattle graze all year long, likely leading to the observed erosion of an unhealthy range ecosystem (NRCS 2014). Continued erosion and degradation is expected without management of cattle.



Figure 3. Clumps of lupine on south Chirikof.

Shifts in vegetation community composition were evident. In the southern part of the island, distinct clumps of lupine (*Lupinus nootkatensis*) were present as this species is unpalatable to cattle. Increase in the cover of Bering's tufted hairgrass (*Deschampsia beringensis*, synonym *Deschampsia cespitosa*), a grazing increaser, was apparent. Composition of upland vegetation communities had a higher proportion of the tufted hairgrass compared to similar vegetation communities on other islands, although this species was not dominant in any place surveyed on Chirikof, and was frequently mixed in with a variety of other grasses and forbs.

An interesting impact to higher elevation included a prevalence of well-developed crowberry (*Empetrum nigrum*) hummocks with high proportions of *Sphaerophorus globosus*, an orange lichen (an increaser with grazing use).

Herbarium Records

There are 83 individual vascular plant records in Arctos (the University of Alaska Fairbanks Museum collaborative database system), representing 73 species. These were collected in 1999 by Steve Talbot and collaborators.

Vegetation Community Notes

Beach

Severe impacts of cattle grazing has led to expanses of eroded dunes in the north part of the island. Increases in yarrow (*Achillea millefolium*) and field horsetail (*Equisetum arvense*) were evident in these areas. Big-head sedge (*Carex macrocephala*), beach arnica (*Senecio pseudo-arnica*), and beach pea (*Lathyrus maritimus*) were also present and typical of Aleutian island beach communities.

Wetland

In the interior of the island, there were large sedge meadows comprised of a variety of species, such as Lyngbye's sedge (*Carex lyngbyei*) closer to the shore, mud sedge (*Carex magellanica*), yellow sedge (*Carex anthoxanthea*), as well as smaller water sedge (*Carex aquatilis*) patches in very wet areas.

Wetter sites had a higher cottongrass (*Eriophorum* spp.) proportion, and typical aquatic herbaceous species including buckbean (*Menyanthes trifoliata*), purple marshlocks (*Comarum palustre*), yellow pond-lily (*Nuphar lutea* spp. *polysepala*), pondweeds (*Potamogeton* and *Stuckenia* spp.), and horsetail and mare's tail species (*Equisetum* and *Hippuris* spp.). There was also good distribution around the island of rush species (*Juncus* spp.) in wet areas and along stream margins.



Figure 4. Typical wetland on Chirikof.

Upland

A high proportion of upland vegetation was graminoid/mixed forb communities. In some areas foxtail barley (*Hordeum brachyantherum*) was more prevalent, and in other areas Sitka brome (*Bromus sitchensis*) or red fescue (*Festuca rubra*) was more common. Bluejoint reedgrass (*Calamagrostis canadensis*) was found in various locations in low proportion. Interspersed with the graminoids were a variety of typical diverse forbs including woolly geranium (*Geranium erianthum*), goldenrods (*Solidago* spp.), Tilesius' wormwood (*Artemisia tilesii*), fireweed (*Chamerion angustifolium*), and river beauty (*Epilobium latifolia*). In drainages, willow was dominant (*Salix* spp., mainly *Salix glauca*), with patches of alder (*Alnus viridus*). Ferns such as lady-fern (*Athyrium filix-femina*) were present but not common on Chirikof compared to other islands.

Dwarf birch (*Betula nana*) was found in some locations on shrub tundra sites with the dominant crowberry (*Empetrum nigrum*) and mixed forbs. Some tundra hummock sites had a predominance of bunchberry dogwood (*Cornus canadensis*) rather than crowberry. Other common forbs on tundra sites included lousewort (*Pedicularis* spp.) and weaselsnout (*Lagotis glauca*). In more wet tundra sites, proportions of graminoids, mostly sedge, increased, along with bog blueberry (*Vaccinium uliginosum*) and forbs such as cloudberry (*Rubus chamaemorus*). In all tundra types, lichen was prevalent, particularly *Cladina* species.

Chowiet Island

Non-Native Species

Chowiet Island appears to have no non-native species. To keep this island non-native free, sanitation measures are recommended including checking footwear and gear for mud, seeds, or vegetation fragments prior to visiting the island. Chowiet Island survey sites are shown in Figure 24.

Herbarium Records

Arctos contains 168 records for 132 species.



Figure 5. Typical lush forb meadows on Chowiet.

Vegetation Community Notes

Beach

Chowiet has typical rocky beach communities with beach ryegrass (*Leymus mollis*) and beachgreens (*Honckenya peploides*) among other common beach species.

Upland

Upland vegetation was primarily lush, diverse, tall forbs with ferns. Forbs on hillslopes included Arctic daisy (*Chrysanthemum arcticum*), rose root (*Rhodiola rosea*, synonym *Sedum rosea*), sandwort (*Moehringia lateriflora*), cowparsnip (*Heracleum maximum*), goldenrod species (*Solidago* spp.), fireweed (*Chamerion angustifolium*), and Arctic raspberry (*Rubus arcticus*). A higher proportion of ferns including wood fern (*Dryopteris expansa*) and lady fern (*Athyrium filix-femina*) were present on this island compared to other islands visited.

Rocky hillsides and uplands above the cliffs had strong lichen development, including many *Cladina* species. High-elevation assemblages above the cliffs including a diverse mix of forbs interspersed with a number of sedge (*Carex* spp.) and grass species such as bluejoint reedgrass (*Calamagrostis canadensis*) and red fescue (*Festuca rubra*). Patches of lingonberry (*Vaccinium vitis-idaea*) were also present. On upland ridges, there were patches of crowberry (*Empetrum nigrum*) heath interspersed with assorted forbs and graminoids.

Bering tufted hairgrass (*Deschampsia beringensis*) was abundant in disturbed linear patches along established trails.

Simeonof Island

Non-Native Species

Eleven non-native species have been noted on Simeonof Island in 2014 and in prior surveys by Steve Talbot and collaborators. Graminoids include sweet vernal grass, common velvetgrass, Kentucky bluegrass, and timothy. Other species include garden strawberry, oxeye daisy, garden rhubarb, rugosa rose, common sheep sorrel, and common chickweed (see Tables 1 and 2 for a complete list). Sitka spruce had also been planted on the island at the ranch house site in the early 1900s, and has reproduced and spread from the original plantings. Simeonof Island survey sites are pictured in Figure 24.



Figure 6. Oxeye daisy and nonnative graminoids in old ranch site area.

Sweet vernal grass and common velvet grass were found in old paddock and fenceline sites and around the ranch house area. These were likely introduced through cattle feed brought to the island. Only one clump of timothy was found, directly adjacent to the ranch house. The timothy and Kentucky bluegrass were likely introduced through human use of the island, on gear or footwear or construction material or in cattle feed.

The rugosa rose noted was planted on a grave site on the island. The rhubarb and strawberry were planted within the garden site of the ranch house. The rhubarb remained in place by the ranch house site, but the strawberry by 2014 had spread to approximately five acres to the east and north of the ranch house site, mostly within old paddock or pasture areas with sparse soil and low vegetation cover. Some strawberry plants were spreading into thicker crowberry tundra north of the sandy spit area.



Figure 7. Sitka spruce reproducing near ranch house.

Oxeye daisy had also been planted by residents, and continued to spread outward in all directions from the ranch house. Approximately six acres contained oxeye daisy, with densest distribution nearest the ranch house to the west in more graminoid dominated communities. The daisy was also readily invading thick crowberry tundra, and was found in isolated clumps to the east in old paddock sites with the strawberry. This species will continue to spread across the island over time.

The plantain and sheep sorrel were sparsely distributed, mostly concentrated near the ranch house and old paddock and fence line sites.

Cattle Use

Cattle were removed from Simeonof Island in 1985, after initial introduction in the late 1800s. The island was inhabited by cattle and fox ranchers through 1940, then abandoned until 1960 with new introductions of cattle (Pippins 2012, Kenyon 1964). The historical allotted number was 275 head of cattle, but numbers varied between around 80 to over 700 at different times.



Figure 8. Oxeye daisy invading crowberry tundra.

The greatest vegetation impacts from grazing were in favored areas in coastal, sandy habitats that exhibited accelerated erosion in response to preferential use and lack of deeply rooted vegetation cover.

Herbarium Records

There are 204 vascular plant records in Arctos, representing 119 species.

Vegetation Community Notes

Vegetation communities on Simeonof Island have been well documented by long-term monitoring of an extensive network of relevé plots, which were installed in 1981 and 1995 (Talbot et al. 1997, Talbot et al. 1984). Remeasurement of all plots took place in summer 2014 by Steve and Sandy Talbot, providing a valuable time series dataset to quantify vegetation change following cattle removal.

Defined communities in 1984 included mesic crowberry (*Empetrum nigrum*) heath, mesic red fescue (*Festuca rubra*) grassland, wet cottongrass (*Eriophorum angustifolium*) - Lyngbye's sedge (*Carex Lyngbyei*) meadow, dry beach wildrye grassland, and mesic alder scrub.

Communities in 1995 included cowparsnip (*Heracleum maximum*) – fireweed (*Chamerion angustifolium*) forb meadow, with a diverse variety of forbs including yarrow (*Achillea borealis*) monkshood (*Aconitum maximum*), angelica (*Angelica lucida*), and woolly geranium (*Geranium erianthum*), found in low microhummocks in lowland areas. Another common community was red fescue (*Festuca rubra*) – rough bentgrass (*Agrostis scabra*) graminoid meadow, which appeared to shift back to the cowparsnip/fireweed meadows in the absence of grazing.



Figure 9. Regenerating beach grass habitat.

Upland communities included crowberry (*Empetrum nigrum*) - alpine bearberry (*Arctostaphylos alpina*) hummocky heath, which also contained Arctic willow (*Salix arctica*), lingonberry (*Vaccinium vitis-idaea*) and various forbs and upland sedges, and the similar crowberry hummocky heath community, which had a higher proportion of Labrador tea (*Ledum decumbens*). Cattle use was low in these communities.

Wetland communities included Lyngbye's sedge (*Carex lyngbyei*) - cottongrass (*Eriophorum* spp.) wet meadow in lowland peatlands associated with ponds and drainages.

Alder (*Alnus crispa*) – salmonberry (*Rubus spectabilis*) deciduous thickets were found in wind-protected middle and lower slopes of mountains, with moderate cattle use.

Beach communities (beachgreens [*Honkenya peploides*] - beach wildrye [*Leymus mollis*] grassland type and beach wildrye – silverweed cinquefoil (*Argentina anserine*) sandy beach meadow type) received the most cattle use and highest levels of erosion and degradation. The beach wildrye – miner's lettuce (*Claytonia siberica*) beach meadow type was a more lush, mesic herb community, which received nutrient enrichment from seabirds and was virtually ungrazed.

Wosnesenski Island

Non-Native Species

Seven non-native species have been recorded on Wosnesenski Island. These include big chickweed, common plantain, Kentucky bluegrass, common sheep sorrel, common chickweed, common dandelion, and thymeleaf speedwell (see Tables 1 and 2 for a complete list). Wosnesenski Island survey sites are depicted in Figure 27.

The Kentucky bluegrass and big chickweed followed similar invasion patterns to Chirikof, distributed around the island but at a

comparatively lower density. Most occurrences were along and within established cattle trails and cattle disturbed areas. The thymeleaf speedwell was found only in a few locations of cattle disturbance, as was common plantain. Sheep sorrel had sparse distribution but locally dense patches. Dandelion was found only in the old village site on the north side of the island.

At this time, there is little threat to native ecosystems from this suite of common non-native species aside from the possible continued expansion of Kentucky bluegrass to more areas of the island or overall denser distribution.

Cattle Use

A whole-island cattle count was conducted on July 22, 2014, totaling approximately 110 cattle. An aerial survey on July 31 2014 counted 129 cattle. Vegetation community impacts were much lesser than on Chirikof Island due to the lower volume of cattle.

Herbarium Records

Arctos records only include willow species. There are 27 records of six *Salix* species.

Vegetation Community Notes

Beach

Beach communities were primarily beach ryegrass mixed with various levels of forbs, similar to Chirikof and Simeonof Island beach communities.



Figure 10. Erosion on higher elevation cattle tracks.



Figure 11. Wetland in island interior.

Wetland

Wosnesenski Island had extensive wetlands, primarily sedge meadows. In wetter spots, cottongrass presence was higher. In many wetlands, lush, thick lichen growth was present in graminoid wetlands, with shrub patches of crowberry (*Empetrum nigrum*) or Arctic willow (*Salix arctica*) on slightly more upland sites. Small patches of sphagnum moss in wetlands were evident. Lakes were distributed throughout the island. Several dry lakebeds were likely caused by a low precipitation year, providing an interesting insight into aquatic community plant distribution.

Drainages were primarily dense willow thickets with gray willow (*Salix glauca*) and diamondleaf willow (*S. pulchra*). Occasional patches of alder (*Alnus viridis*) were also present.

Upland

Lower elevation uplands were primarily crowberry tundra types or diverse forb meadows, including fireweed (*Chamerion angustifolium*), lupine (*Lupinus nootkatensis*), cowparsnip (*Heracleum maximum*), goldenrod (*Solidago multiradiata*), Indian paintbrush (*Castilleja unalaschcensis*), and chocolate lily (*Fritillaria camschatcensis*). Higher elevation types include typical alpine low shrubs, forbs, and graminoids. Vegetation overall was similar to communities documented on Simeonof Island, and reflected types that Chirikof would likely revert to with cattle management or removal.



Figure 12. Lush wildflower meadows on Wosnesenski Island.

Aiktak Island

Non-Native Species

Aiktak Island had two non-native species, annual bluegrass and common chickweed (see Tables 1 and 2 for a complete list). Annual bluegrass was abundant around and near the cabin and on the trail from the beach, as well as up the trail heading to the cliffs. Common chickweed was found in several locations on the trail above the cabin, nearer the cliffs. To keep this island relatively non-native free, sanitation measures are recommended including checking footwear and gear for mud, seeds, or vegetation fragments prior to visiting the island. Aiktak Island survey sites are shown in Figure 20.



Figure 13. Annual bluegrass (*Poa annua*) around cabin.

The two non-native species present could possibly be eradicated by manual means (pulling/digging and bagging for off-island disposal) although the density of annual bluegrass and probable large seedbank may make mechanical efforts impractical.

Herbarium Records

There are 13 records in Arctos representing 13 species.

Vegetation Community Notes

Beach

Beach communities were similar to those on Chowiet and other islands, with beachgreens and beach wildrye in rocky areas.

Upland

Upland communities were well developed graminoid and diverse forb communities similar to those on Chowiet Island.



Figure 14. Thick graminoid and forb vegetation.

Akun Island

Non-Native Species

The visit to Akun Island was brief and only involved one stop on the southeastern portion of the island, in Seredka Bay near Round Head. Four non-native species were found, including big chickweed, Kentucky bluegrass, common chickweed, and thymeleaf speedwell (see Tables 1 and 2 for a complete list). Akun Island survey sites are shown in Figure 21.

Cattle Use

Cattle are present on Akun Island, although none were encountered during the 2014 visit. Erosion and deposition cycles have been noted on Akun Island as a result of cattle use (NRCS 2014).

Herbarium Records

There are no Arctos records from Akun Island.



Figure 15. Forb meadow uplands showing cattle use rills.



Figure 16. Willow drainage habitat.

Vegetation Community Notes

Wetland types include sedge-graminoid wetlands and willow drainage. Upland types include low shrub-forb assemblages, low shrub-graminoid assemblages, diverse forb meadows, and crowberry tundra types.

Cattle-impacted sideslopes near drainages and upper shore areas included a curiously high proportion of monkey flower (*Mimulus guttatus*).

Akutan Island

Non-Native Species

Two excursions to Akutan Island revealed no non-native species. Visits included stops in Hot Springs Bay, in the northeastern part of the island, and Cascade Bight in the southwestern section.

As this was not a comprehensive survey, no conclusions can be made as to overall non-native species distribution on this island. Non-native species are likely to occur around inhabited and higher use areas, such as the City of Akutan, or possibly in areas with cattle use. Akutan Island survey sites are pictured in Figure 22.



Figure 17. Lush forb – graminoid hillslopes.

Herbarium Records

There are 23 records in Arctos, representing 23 species.

Vegetation Community Notes

The brief stops on Akutan Island revealed typical rocky beach ryegrass communities, plus lowland sedge-graminoid wetlands and riverine willow communities. Uplands contained typical diverse forb and shrub mix, including native rhododendron (*Rhododendron groenlandicum*), and patches of tall salmonberry (*Rubus spectabilis*) as well as tall blueberry (*Vaccinium ovalifolium*). There was a high proportion of lady fern (*Athyrium filix-femina*). Patches of crowberry tundra were also evident.

Sedanka Island

Non-Native Species

The visit to Sedanka Island was brief and only involved one stop on western part of the island. No non-native species were detected in this location. Sedanka Island survey sites are shown in Figure 25.

Herbarium Records

There are 25 records in Arctos of 25 species.

Vegetation Community Notes

Vegetation was similar to Akutan Island.



Figure 18. Stunning scenery on an Akutan beach.

Table 1. Non-Native Species List

Scientific Name	Common Name	USDA Code	Number of 2014 records	Island
<i>Anthoxanthum odoratum</i>	sweet vernal grass	ANOD	-	Simeonof
<i>Cerastium fontanum</i> ssp. <i>vulgare</i>	big chickweed	CEFOV2	42	Akun, Chirikof, Wosnesenski
<i>Fragaria virginiana</i>	garden strawberry	FRVI	13	Simeonof
<i>Holcus lanatus</i>	common velvetgrass	HOLA	2	Simeonof
<i>Hypochaeris radicata</i>	hairy catsear	HYRA3	-	Chirikof
<i>Leucanthemum vulgare</i>	oxeye daisy	LEVU	10	Simeonof
<i>Lolium perenne</i>	perennial ryegrass	LOPE	-	Chirikof
<i>Phleum pratense</i>	timothy	PHPR3	1	Simeonof
<i>Plantago major</i>	common plantain	PLMA2	9	Chirikof, Simeonof, Wosnesenski
<i>Poa annua</i>	annual bluegrass	POAN	10	Aiktak, Chirikof
<i>Poa pratensis</i> spp. <i>irrigata</i>	Kentucky bluegrass	POPR	54	Akun, Chirikof, Simeonof, Wosnesenski
<i>Rheum rhabarbarum</i>	garden rhubarb	RHRH2	1	Simeonof
<i>Rosa rugosa</i>	rugosa rose	RORU	3	Simeonof
<i>Rumex acetosella</i>	common sheep sorrel	RUAC3	3	Chirikof, Simeonof, Wosnesenski
<i>Sagina procumbens</i>	birdseye pearlwort	SAPR	5	Chirikof
<i>Stellaria media</i>	common chickweed	STME2	9	Aiktak, Akun, Chirikof, Simeonof, Wosnesenski
<i>Taraxacum officinale</i>	common dandelion	TAOF	2	Chirikof, Wosnesenski
<i>Veronica serpyllifolia</i> ssp. <i>serpyllifolia</i>	thymeleaf speedwell	VESES	3	Akun, Chirikof, Wosnesenski

Note: Includes observations in July 2014, notes from Steve Talbot for Chirikof from prior visits, and data from Steve Talbot et al. from Simeonof from prior visits.

Table 2. Non-Native Species by Island

Island	Scientific Name	Common Name	USDA Code
Aiktak	<i>Poa annua</i>	annual bluegrass	POAN
	<i>Stellaria media</i>	common chickweed	STME2
Akun	<i>Cerastium fontanum</i> ssp. <i>vulgare</i>	big chickweed	CEFOV2
	<i>Poa pratensis</i> spp. <i>irrigata</i>	Kentucky bluegrass	POPR
	<i>Stellaria media</i>	common chickweed	STME2
	<i>Veronica serpyllifolia</i> ssp. <i>serpyllifolia</i>	thymeleaf speedwell	VESES
Chirikof	<i>Cerastium fontanum</i> ssp. <i>vulgare</i>	big chickweed	CEFOV2
	<i>Hypochaeris radicata</i>	hairy catsear	HYRA3
	<i>Lolium perenne</i>	perennial ryegrass	LOPE
	<i>Plantago major</i>	common plantain	PLMA2
	<i>Poa annua</i>	annual bluegrass	POAN
	<i>Poa pratensis</i> spp. <i>irrigata</i>	Kentucky bluegrass	POPR
	<i>Rumex acetosella</i>	common sheep sorrel	RUAC3
	<i>Sagina procumbens</i>	birdseye pearlwort	SAPR
	<i>Stellaria media</i>	common chickweed	STME2
	<i>Taraxacum officinale</i>	common dandelion	TAOF
	<i>Veronica serpyllifolia</i> ssp. <i>serpyllifolia</i>	thymeleaf speedwell	VESES
Simeonof	<i>Anthoxanthum odoratum</i>	sweet vernal grass	ANOD
	<i>Fragaria virginiana</i>	strawberry	FRVI
	<i>Holcus lanatus</i>	common velvetgrass	HOLA
	<i>Leucanthemum vulgare</i>	oxeye daisy	LEVU
	<i>Pheum pratense</i>	timothy	PHPR3
	<i>Plantago major</i>	common plantain	PLMA2
	<i>Poa pratensis</i> spp. <i>irrigata</i>	Kentucky bluegrass	POPR
	<i>Rheum rhabarbarum</i>	garden rhubarb	RHRH2
	<i>Rosa rugosa</i>	rugosa rose	RORU
	<i>Rumex acetosella</i>	common sheep sorrel	RUAC3
	<i>Stellaria media</i>	common chickweed	STME2
Wosnesenski	<i>Cerastium fontanum</i> ssp. <i>vulgare</i>	big chickweed	CEFOV2
	<i>Plantago major</i>	common plantain	PLMA2
	<i>Poa pratensis</i> spp. <i>irrigata</i>	Kentucky bluegrass	POPR
	<i>Rumex acetosella</i>	common sheep sorrel	RUAC3
	<i>Stellaria media</i>	common chickweed	STME2
	<i>Taraxacum officinale</i>	common dandelion	TAOF
	<i>Veronica serpyllifolia</i> ssp. <i>serpyllifolia</i>	thymeleaf speedwell	VESES

Note: Includes observations in July 2014, notes from Steve Talbot for Chirikof from prior visits, and data from Steve Talbot et al. from Simeonof from prior visits.

Figure 19. Overview Map of Vegetation Survey

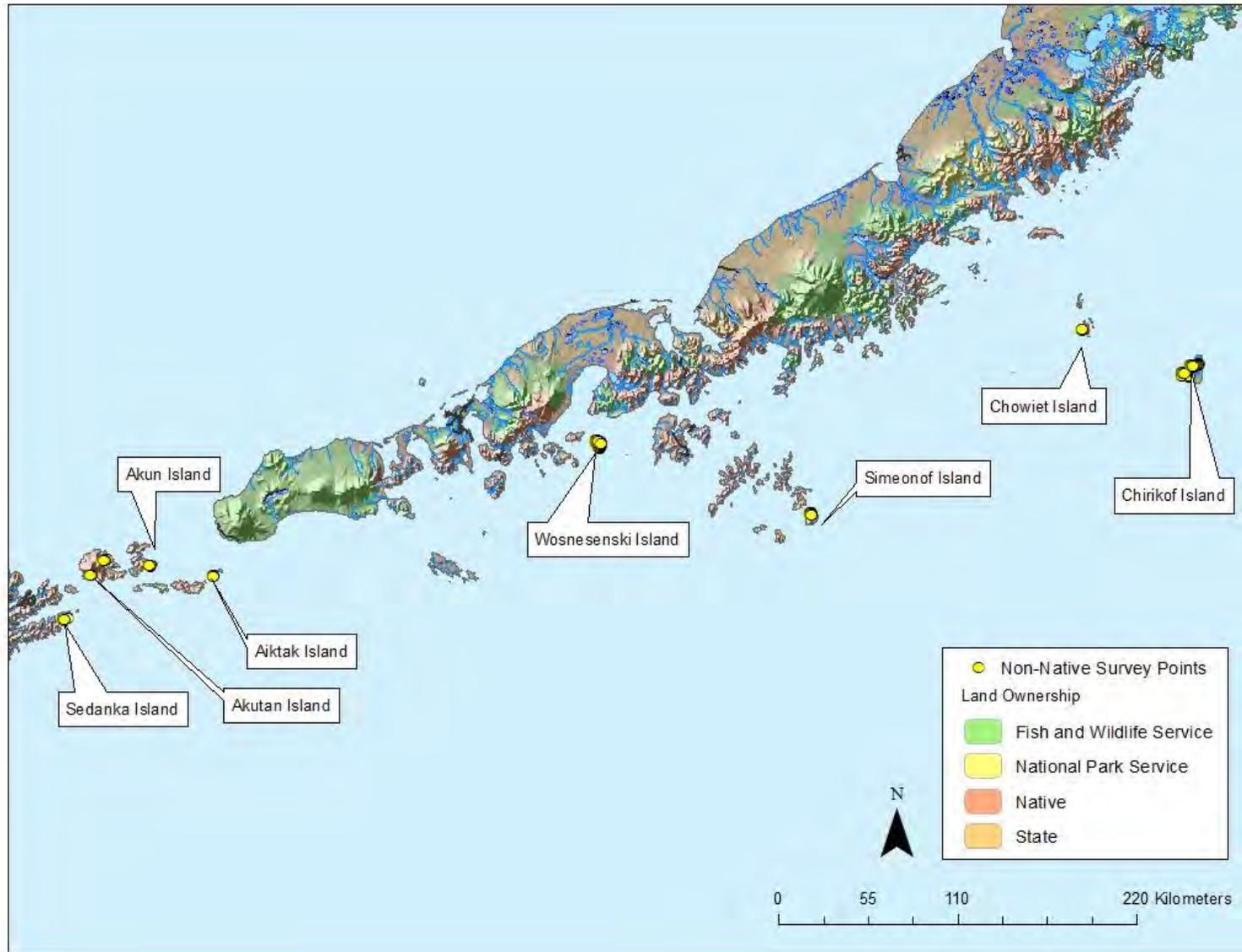


Figure 20. Aiktak Island Points

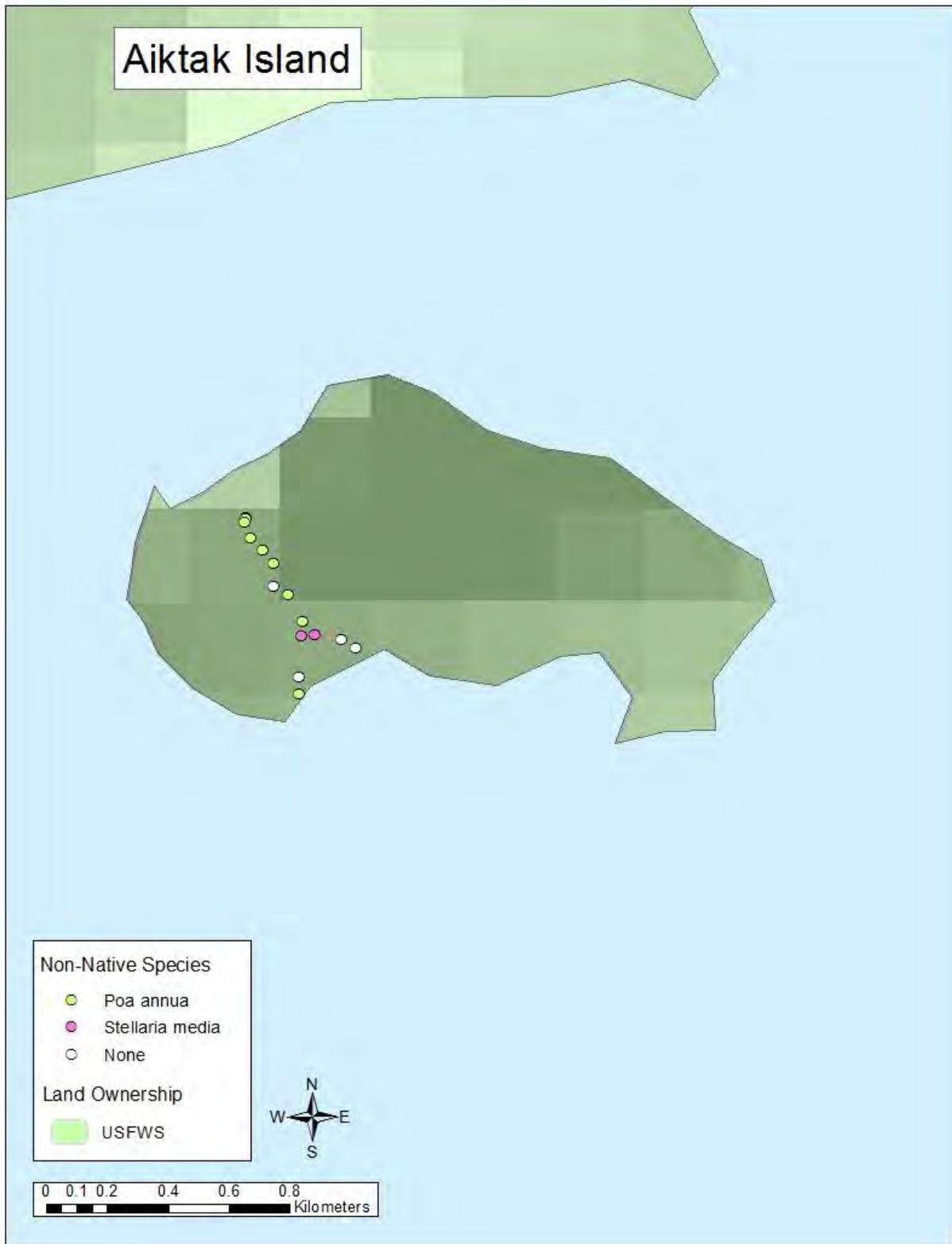


Figure 21. Akun Island Points

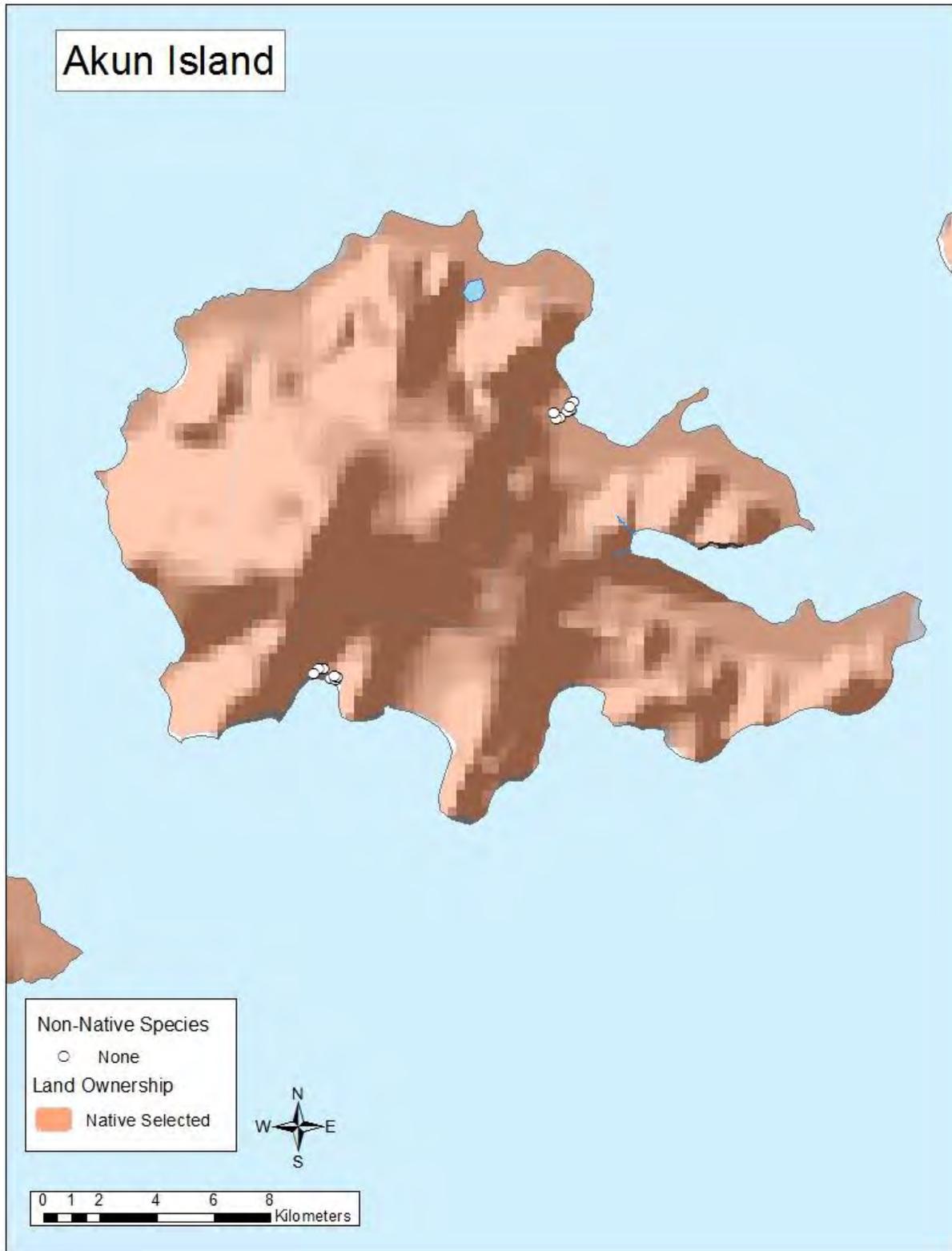


Figure 22. Akutan Island Points

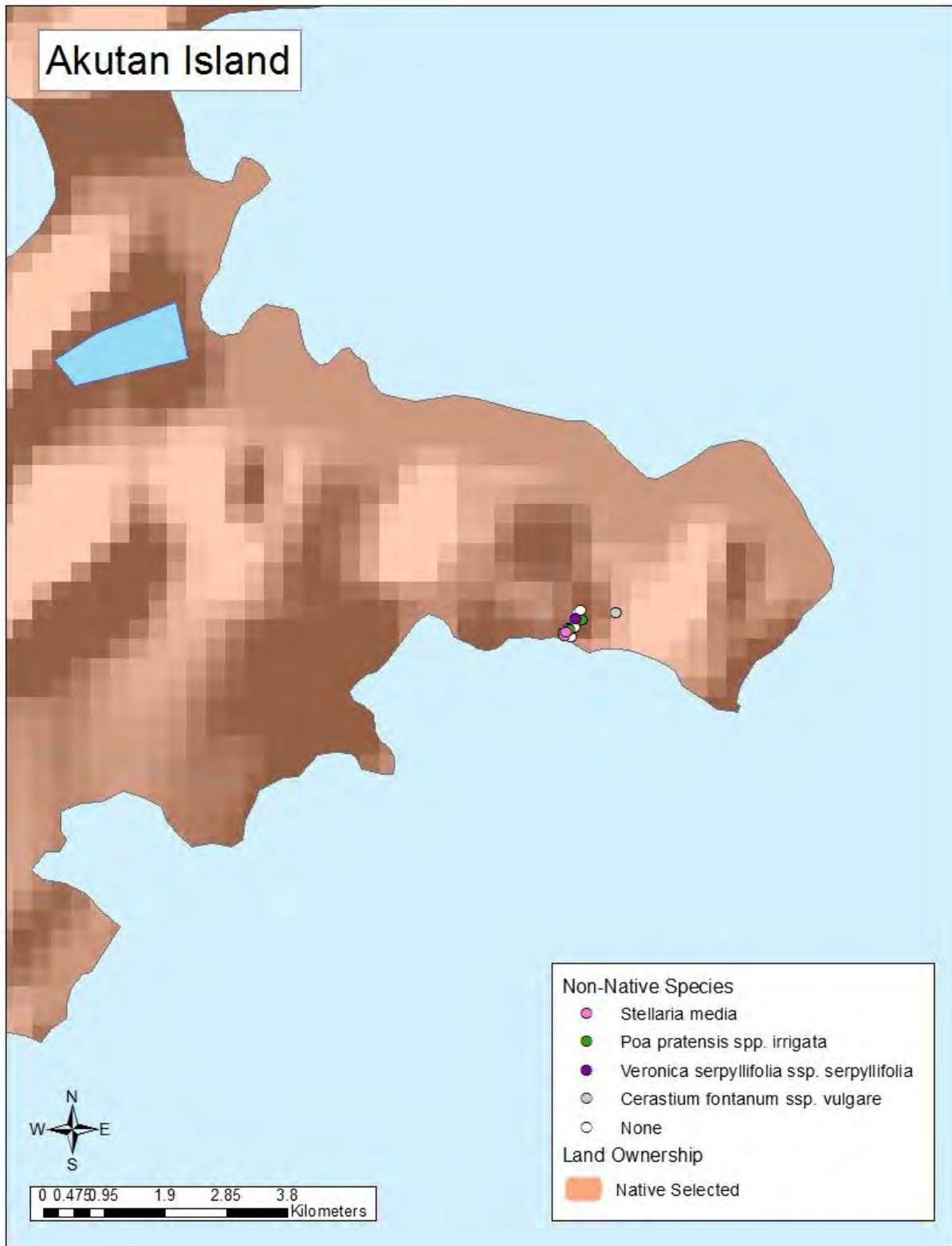


Figure 23. Chirikof Island Points

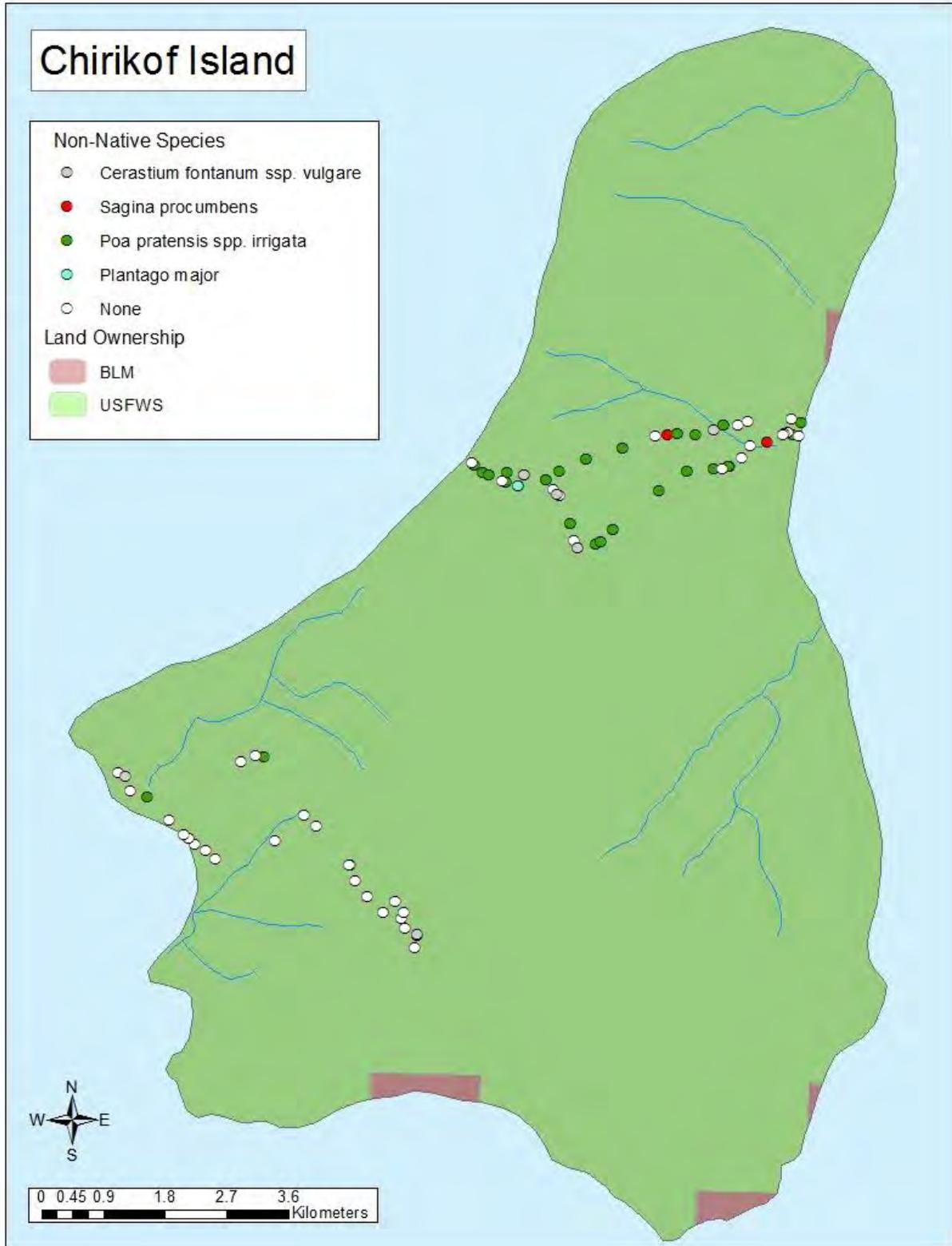


Figure 24. Chowiet Island Points

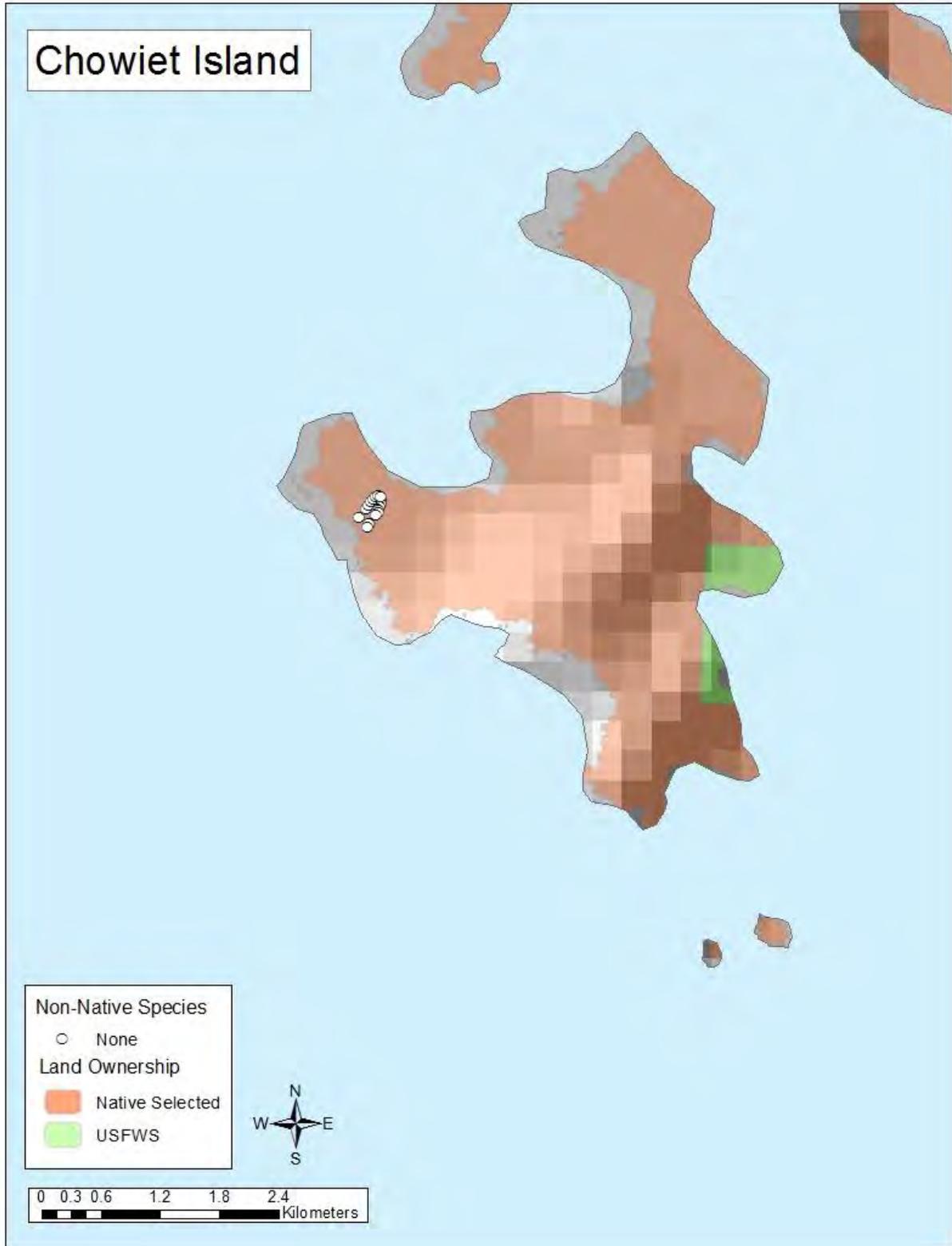


Figure 25. Sedanka Island Points



Figure 26. Simeonof Island Points

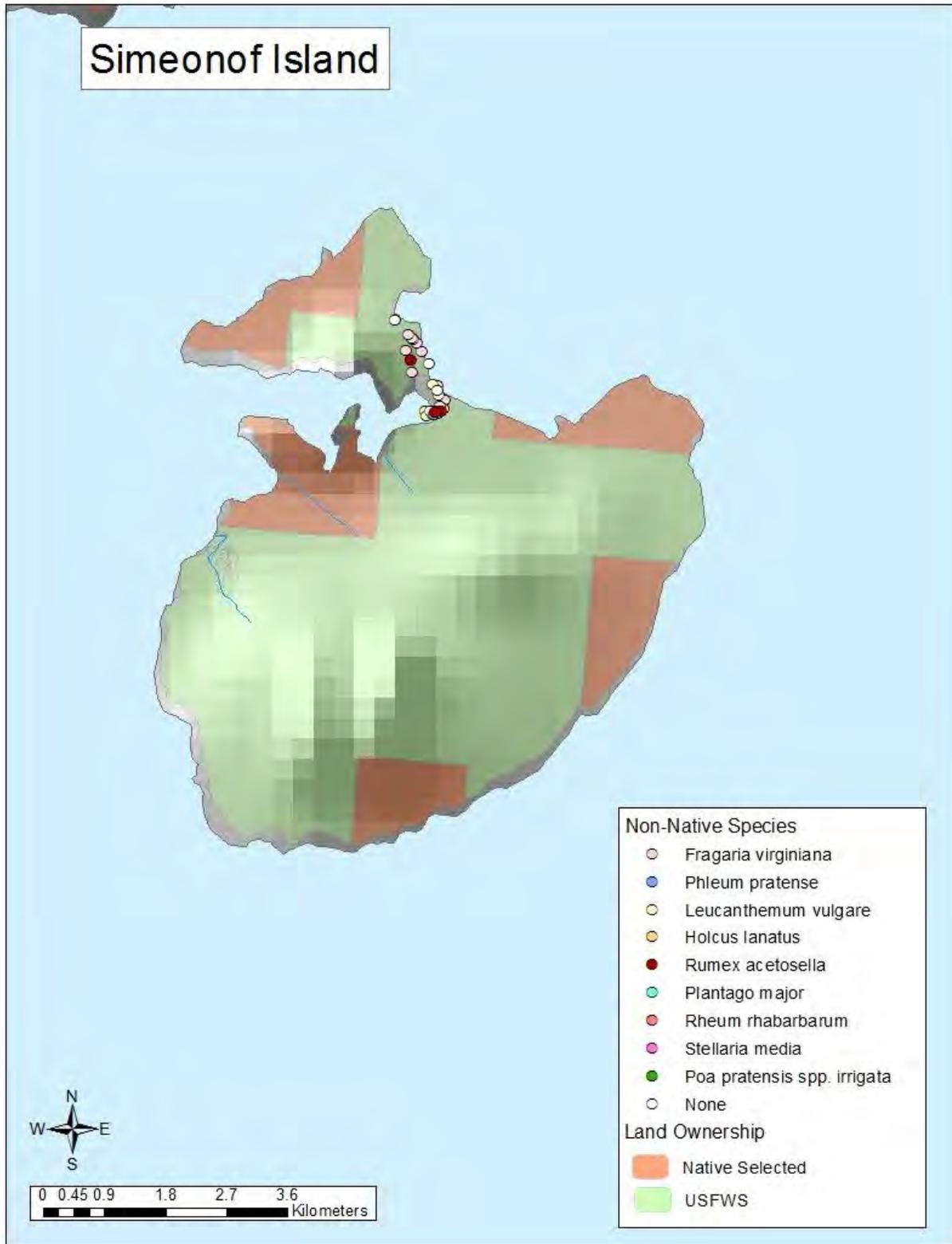
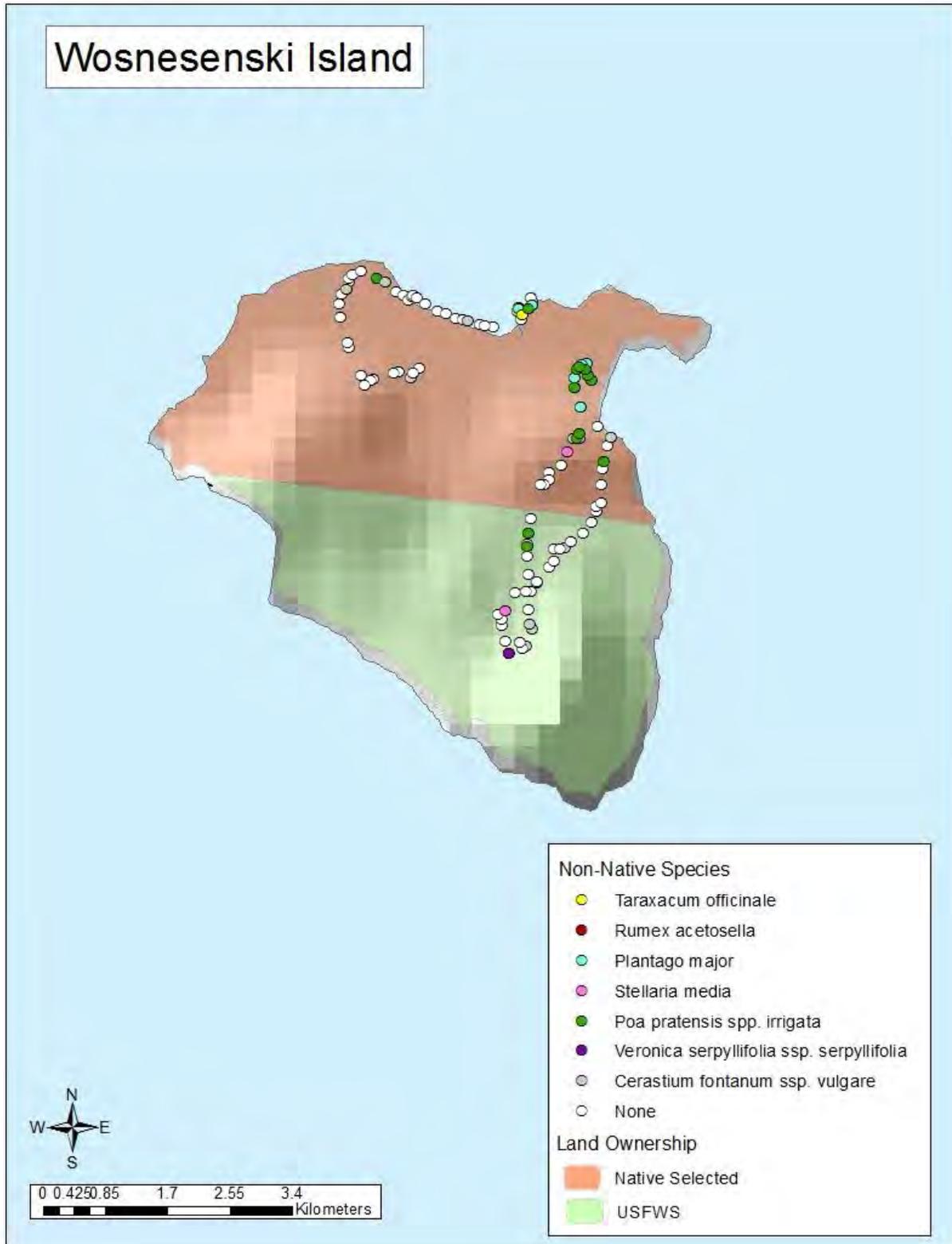


Figure 27. Wosnesenski Island Points



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