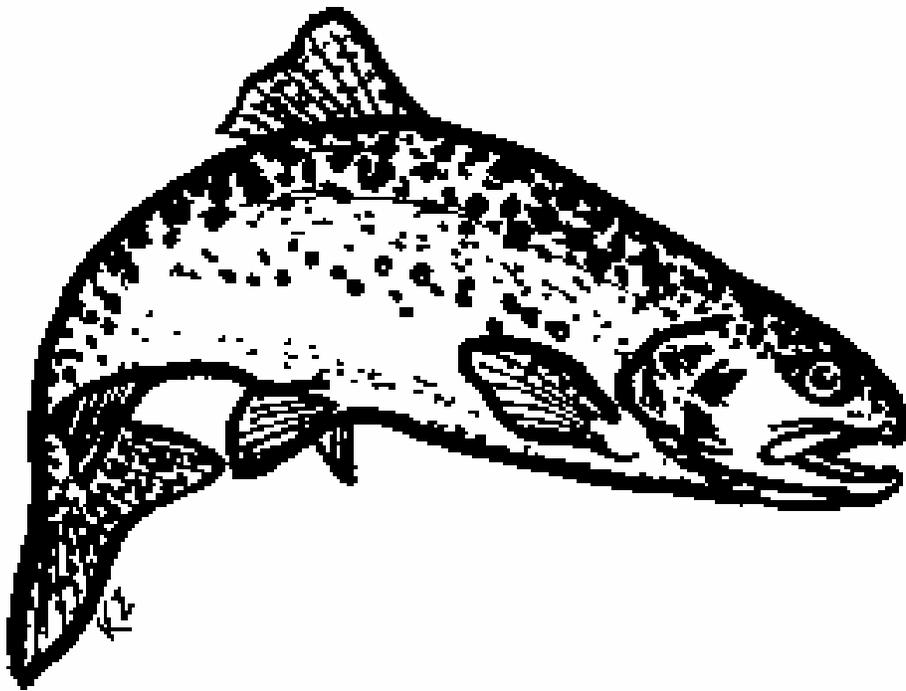


Summer Steelhead



Coastal Summer Steelhead

Existing Populations

There are two populations within the Coastal Summer Steelhead SMU: the Siletz and North Umpqua (Table 109). There are also reports of a potential historical population in the South Umpqua basin where there are no summer steelhead currently occur. Information on the existence of this population was not determined to be sufficient for inclusion in this assessment but this conclusion should be reconsidered in any subsequent conservation plans.

Table 109. Population list and existence status for the coastal summer steelhead SMU.

Exist	Population	Description
Yes	Siletz	Siletz River basin upstream of Siletz Falls.
Yes	North Umpqua	North Umpqua River basin.

Habitat Use Distribution

The criterion was evaluated based on current and historically accessible areas. Several populations show “0 miles inaccessible”. It must be recognized that these estimates are derived at the 1:100,000 scale and thus *will not* capture habitat lost in many smaller (1:24,000) streams resulting from barriers such as culverts. Habitat lost in smaller streams will vary by population, but is not likely to account for 50% of any population, and thus does not alter assessment outcomes derived using data at the 1:100,000 scale. Data presented in this report on accessibility of habitat should be viewed as general approximations and not as a definitive analysis on habitat availability/accessibility. These issues will be more thoroughly addressed through the conservation planning process.

These data also do not reflect changes in habitat usage due to changes in habitat quality, or changes in availability of estuary habitat. Christy (2004) estimated that 62% of freshwater wetland and saltwater marsh habitat has been lost or converted to other habitat types in the Siletz and Umpqua SMU since 1850.

Table 110. Habitat accessibility data used in evaluating interim criteria for the Coastal Summer Steelhead SMU.

Population	Accessible (miles)	Inaccessible (miles)	Percent Accessible
Siletz	47	0	100%
North Umpqua	277	25	92%

Abundance

Abundance estimates for North Umpqua naturally-produced summer steelhead adults were based on counts of naturally-produced fish at Winchester Dam less naturally-produced broodstock take at the dam, and less the number of naturally-produced fish harvested above the Dam (pers. comm., Jim Muck, ODFW, 4/12/04; pers. comm., John Leppink, ODFW, 5/6/04).

Abundance estimates in the Siletz reflect the number of naturally-produced fish passing the Siletz Falls trap less hooking induced mortality of naturally-produced fish. Naturally produced fish incurred hooking mortality through 1999 at which time angling above the falls was terminated (Deckard 2004; Weber and Fortune, 1973). Adult passage at Siletz Falls has been consistently monitored since return year 1992. Passage was also monitored for a brief period from 1969-1972. During that time period naturally-produced returns were generally greater than they have been since monitoring resumed in 1992.

Table 111. Abundance estimates (adults) used in evaluating interim criteria for the Coastal Summer Steelhead SMU.

Population	30-Year Average	25% of Average	Abundance by Return Year					No. Years >25% of Full Seeding
			2001	2002	2003	2004	2005	
Siletz ^a	370	93	419	547	721	892	509	5
North Umpqua	3,472	868	4,026	5,190	3,264	3,486	3,947	5

a. Average abundance based on 1970-73 and 1993-2005 broods.

Productivity

Population productivity was estimated using spawner abundance estimates, hatchery composition, and annual age composition. Age composition data for the North Umpqua were provided by ODFW (pers. comm., Mark Chilcote, 2/9/04). Parents were defined as hatchery and naturally-produced fish combined where naturally-produced fish were calculated as described in the “Abundance” section. Hatchery fish were estimated as the number of adipose finclipped fish observed passing Winchester dam, less fish harvested above Winchester Dam, and less fish whose spawning territory does not overlap with the spawning territory of naturally-produced fish. Please see the “Population Details” section for a discussion on how the spatial segregation of hatchery and naturally-produced spawners was accounted.

Age composition in the Siletz was obtained from Chilcote (2001). Hatchery spawners were estimated as described below under “Reproductive Independence”. Because large numbers of hatchery fish were passed above the trap prior to 2000, parent abundance was never less than the 30-year average abundance of natural fish. Productivity estimates were examined in the five years of lowest parent abundance. Total abundance in those years ranged from 668-1,257.

Table 112. Productivity estimates used in evaluating interim criteria for the Coastal Summer Steelhead SMU.

Population	Recent complete brood years of below average abundance	Productivity (R/S)					
		Year 1	Year 2	Year 3	Year 4	Year 5	Years \geq 1.2
Siletz ^a	1993-94, 1996, 1998-99	0.1	0.3	0.7	1.1	0.7	0
North Umpqua	1996-2000	1.1	1.6	2.8	1.1	1.3	3

a. Parent abundance was never below 30 year average. Values from five years of lowest parent abundance.

Reproductive Independence

Reproductive independence for the North Umpqua was evaluated based on the percentage of hatchery fish in the naturally-spawning population as calculated in the “Productivity” section. Only hatchery fish that were not spatially segregated from naturally-produced spawners were included in the estimate.

In the Siletz, non-finclipped fish are selectively passed upstream of Siletz Falls onto the spawning grounds. Hatchery fish have not been allowed upstream of the falls since 1999 (2000 brood). A limited number of hatchery fish may bypass the trap and reach the spawning ground, but that number is expected to be very low (pers. comm., Kevin Goodson, ODFW, 4/14/04). For broods prior to 2000, the hatchery passage estimate was adjusted to account for harvest above the trap, and the naturally-produced passage estimate was adjusted to account for hook-and-release mortality. See “Population Details” for specifics.

Table 113. Reproductive independence estimates used in evaluating interim criteria for the Coastal summer Steelhead SMU.

Population	Percent of Spawning Fish of Hatchery Origin					Years
	2001	2002	2003	2004	2005	≤10%
Siletz	0%	0%	0%	0%	0%	5
North Umpqua	19%	16%	19%	16%	17%	0

Hybridization

Hybridization has not been identified as an issue for coastal summer steelhead.

Population Details**North Umpqua**

Harvest from 1986-2002 was estimated using expanded observations of harvest of naturally-produced summer steelhead above Winchester Dam from harvest card reporting (data provided by ODFW, pers. comm., John Leppink, 5/6/04). Prior to 1986, the harvest rate on naturally-produced fish was assumed to be 39% as assumed by Chilcote (2001).

In estimating harvest of winter and summer steelhead it was found that in several years winter steelhead harvest estimates were greater than winter steelhead passage at Winchester Dam. In these years, excess winter steelhead harvested were considered to be summer steelhead. See the Coastal Winter Steelhead SMU methods for further explanation.

Radio telemetry studies of adult summer steelhead in the North Umpqua showed spatial segregation between spawning of hatchery and naturally-produced fish (Loomis et al. 2003). For example, 49% of naturally-produced, radio-tagged adults that survived to spawn, did so in Steamboat Creek whereas no hatchery fish spawned in Steamboat. Conversely, 80% of radio-tagged hatchery fish that survived to spawn did so in Rock Creek as opposed to only 10% of naturally-produced fish.

Estimates of reproductive independence and productivity reflect the spatial segregation of naturally and hatchery produced spawners. A weighted hatchery effect was estimated based on the percentage of spawners that were hatchery origin in areas where naturally-produced steelhead spawned. This estimate reflects the potential for interbreeding of hatchery and naturally-produced fish. Potential impacts are most significant where hatchery and naturally-produced spawning overlaps. Conversely, potential impacts are much less significant where spawning of hatchery and naturally-produced fish is spatially segregated. The estimate was weighted by the proportion of the naturally-produced spawning population that spawned in each area of the North Umpqua. Separate hatchery fractions were estimated annually in areas including: the lower North Umpqua (Winchester Dam to Deadline Falls excluding the Little River and Rock Creek, RM 7.2-35.8), the “Fly Water” (basin above Deadline Falls excluding Steamboat Creek), Steamboat Creek, Rock Creek, and the Little River (Table 114). Fractions were estimated using counts of adults past Winchester Dam minus fish harvested. Since Steamboat Creek held the greatest proportion (49%) of naturally-produced spawners of these areas, it received the greatest weight in calculating the hatchery fraction for the entire population. While this method accounts for spatial segregation among different areas within the North Umpqua, it does not account for segregation within the aforementioned areas. Loomis et al. (2003) demonstrated that there is segregation of finclipped and non-finclipped spawners within Rock Creek. However, sample sizes of spawners within Rock Creek were insufficient for the purposes of this assessment to draw quantitative conclusions from the data.

The radio telemetry findings were derived from fish tagged between 1998 and 2000. The findings of the study were applied uniformly to all years since 1974 to estimate reproductive independence and productivity. Depending on the effects of changes in hatchery practices, this assumption may or may not be valid. If it is not valid, it is likely that we have under-estimated risks in terms of reproductive independence and productivity. Both the productivity and independence criteria were evaluated using data from recent years, so it is likely that the telemetry findings are fairly representative of the assessed period.

The North Umpqua population failed the reproductive independence criterion because significant numbers of hatchery fish spawn in Rock Creek. This is the result of the management decision to release all of the hatchery smolts directly into Rock Creek, an area that is not one of the principle spawning areas for naturally-produced summer steelhead. The intent of this management action was to minimize the numbers of hatchery fish spawning in the preferred natural production areas in the North Umpqua. ODFW biologists believe the risk to the naturally-produced population from the high levels of hatchery spawners in Rock Creek is low compared to the risk associated with these hatchery fish spawning in the majority of the preferred natural spawning areas. The interim criterion, as developed, is not able to differentiate between these two situations and only looks at the overall composition of spawners. This management strategy, and the risk associated with it, will be reviewed when a conservation plan is developed for summer steelhead.

Table 114. Percentage of total non-finclipped or finclipped spawners that spawned, by telemetry study area. Sample size for non-finclipped fish is 98, and for finclipped fish is 20. Fish were tagged between June 1998 and October 2000. Data from Loomis et al. (2003).

Spawning Area	Non-finclipped	Finclipped
Lower North Umpqua	10%	10%
Fly Water	21%	10%
Steamboat Creek	49%	0%
Little River	9%	0%
Rock Creek	10%	80%

Siletz

Prior to the 2000 return year, a fishery targeting hatchery summer steelhead existed in the Siletz above the Siletz trap. Abundance of hatchery fish was adjusted to account for harvest in those years. The only estimates of harvest rates above the trap come from Weber and Fortune (1973). Between 1969 and 1972, harvest rates of hatchery fish ranged from 17-29%. The average harvest rate from those years (21%) was applied to the number of hatchery fish passed above the dam trap in the 1992-1999 return years. Though regulations mandated release of caught naturally-produced fish, we incorporated an estimate of hook-and-release mortality by assuming that 10% of naturally-produced fish hooked died, and that naturally-produced hooking rates were equal to hatchery harvest rates. For return years 1969-71, passage estimates for both hatchery and naturally-produced fish were adjusted by the number of fish estimated to be harvested from Weber and Fortune (1973).

Assessment Conclusions

This SMU includes the North Umpqua and Siletz populations. The lack of reproductive independence by the North Umpqua population and low productivity for the Siletz population indicate the near-term sustainability of the SMU is potentially at risk. Roughly 20% of the spawners in the North Umpqua are hatchery fish. Productivity in the Siletz should improve in the future because ODFW has ceased passing hatchery steelhead onto the spawning grounds above Siletz Falls.

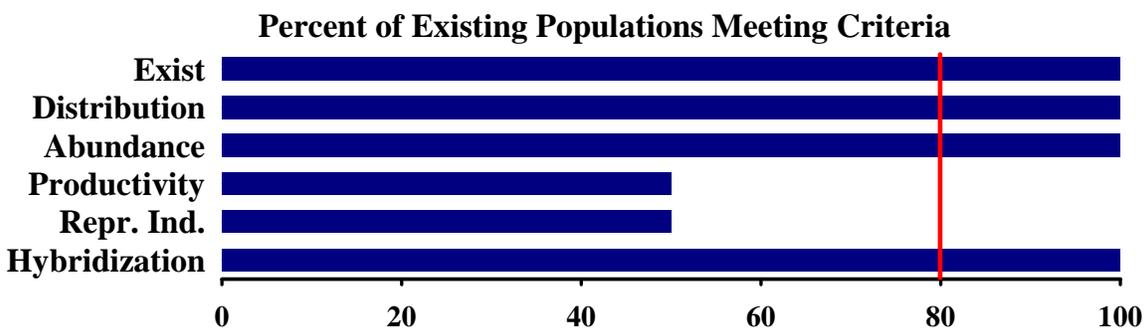
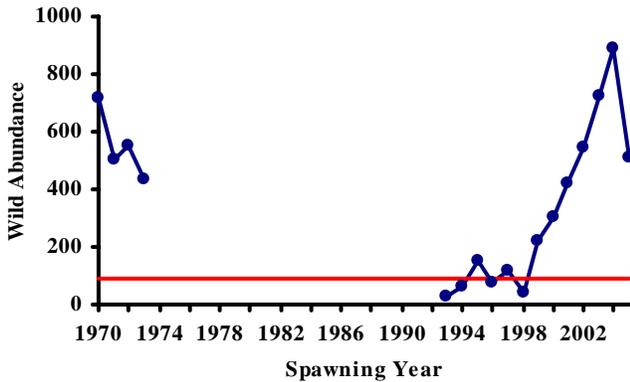
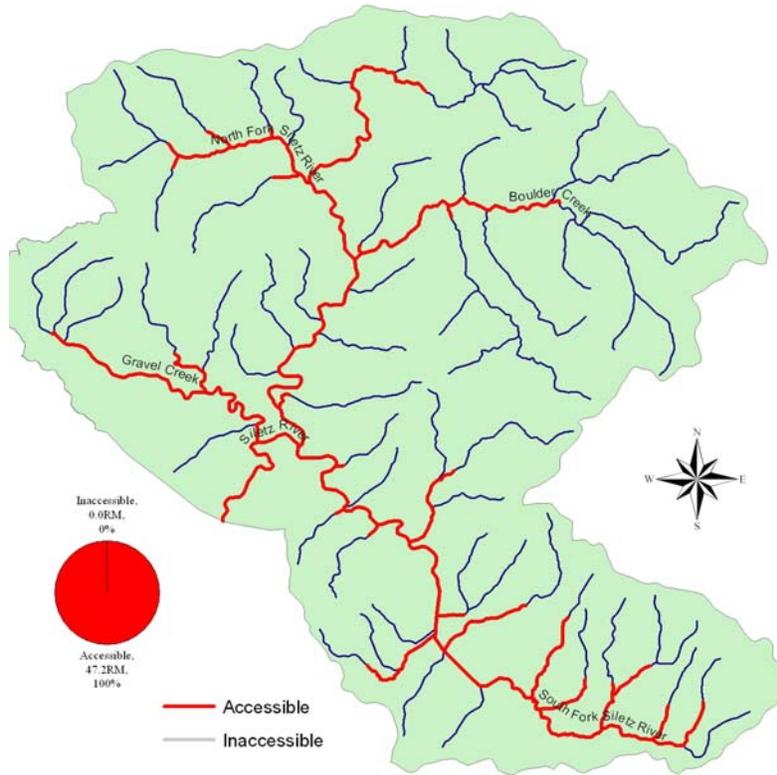
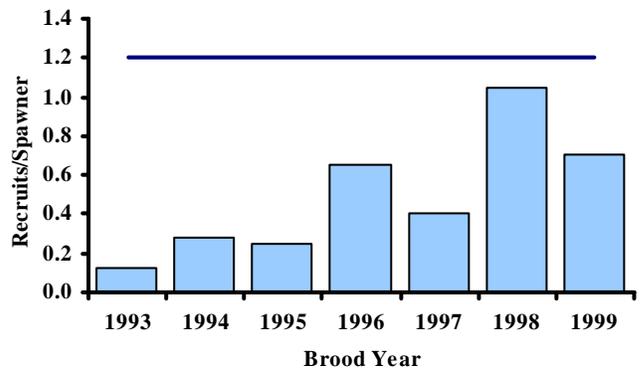
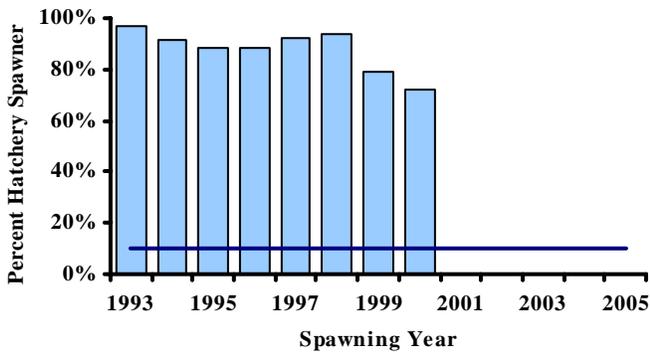


Figure 26. Assessment outcome for each of the six interim criteria with respect to the 80% threshold identified by the NFCP.

Siletz– Coast Summer Steelhead



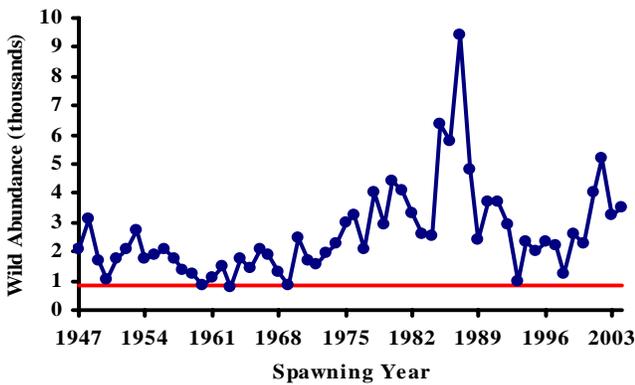
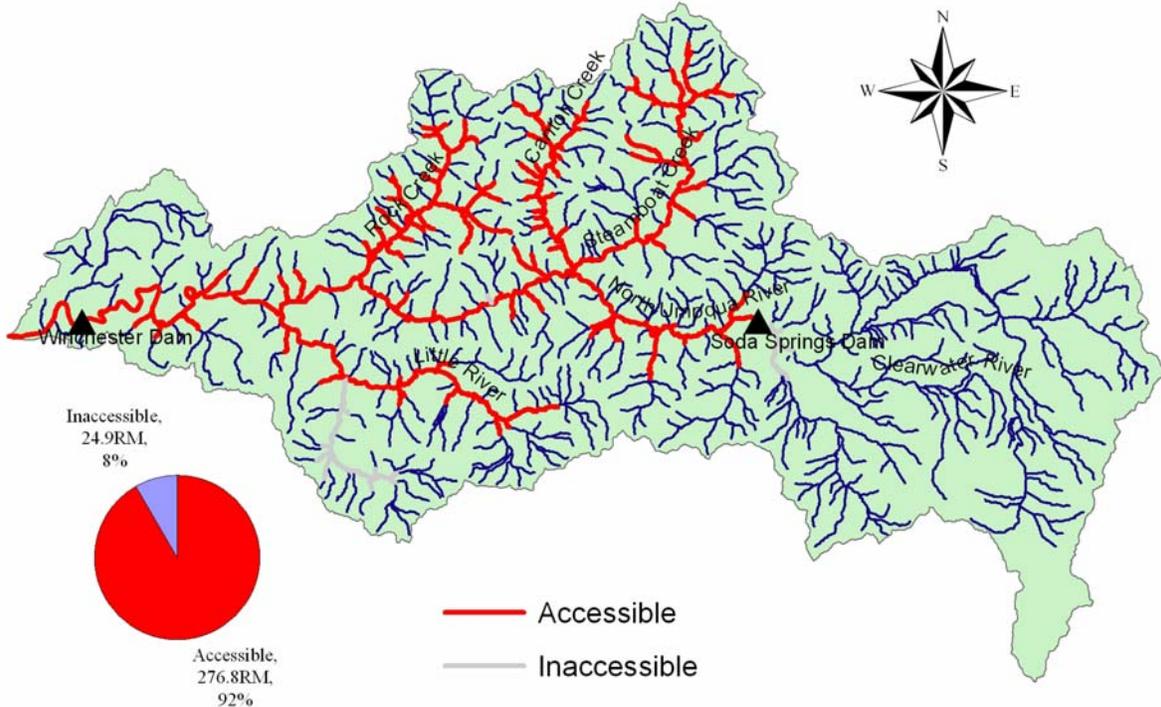
The Siletz population passed each of the interim criteria except for productivity. Abundance in the Siletz is monitored at the Siletz Falls trap. Adult passage at Siletz Falls has been consistently monitored since 1992. Passage was also monitored for a brief period from 1969-1972. During that time period returns were generally greater than they have been since monitoring resumed in 1992. Hatchery fish have not been allowed to pass the trap to reach the primary spawning grounds in the basin since the 2000 return year.



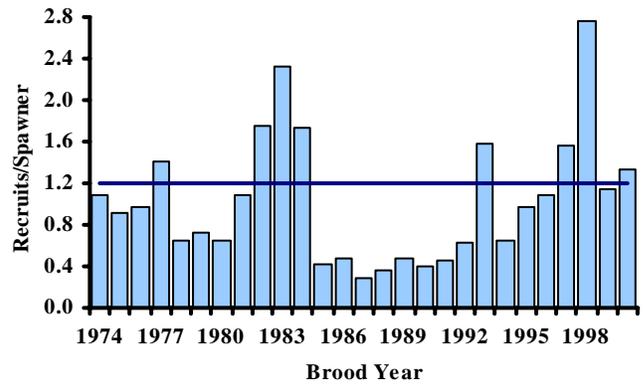
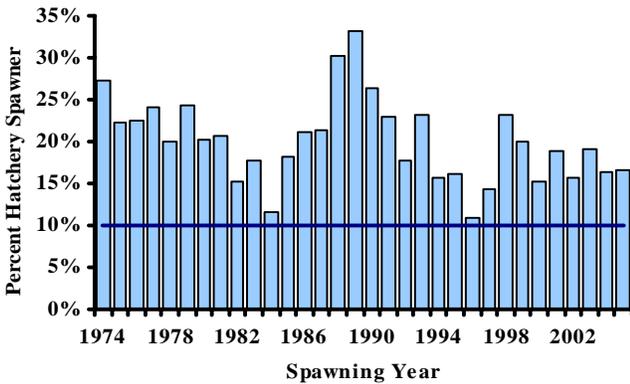
Assessment Outcome

Existence	Distribution	Abundance	Productivity	Independence	Hybridization
<i>Pass</i>	<i>Pass</i>	<i>Pass</i>	<i>Fail</i>	<i>Pass</i>	<i>Pass</i>

North Umpqua – Coast Summer Steelhead



The North Umpqua population passed each of the criteria with the exception of reproductive independence. Natural abundance estimates for the North Umpqua were based on counts of naturally-produced fish at Winchester Dam less the number of naturally-produced fish harvested above the dam. Hatchery fractions and productivity were both evaluated considering the spatial segregation of hatchery and naturally-produced steelhead spawners within the North Umpqua.



Assessment Outcome

Existence	Distribution	Abundance	Productivity	Independence	Hybridization
Pass	Pass	Pass	Pass	Fail	Pass