

Table 1: Sampling information including location, collectors, date, sample size, and time reared in the common garden.

Population	Country	Region	Lat	Long	Collector	Date of sampling	Sample size: Field	Sample size: Common garden	Time in common garden
Shirakura	Japan	Native	31.707	130.272	EE Seika , C Seika , R Terada	5/15/2015	19	0	n/a
Kaede	Japan	Native	31.817	131.448	EE Seika , C Seika , R Terada	5/17/2015	20	3	5 wp
Shikaoishima Island	Japan	Native	33.663	130.296	EE Seika , C Seika , R Terada, S. Kawauchi	5/18/2015	15	0	n/a
Wairo	Japan	Native	33.674	130.427	EE Seika , C Seika , R Terada, S. Kawauchi	5/18/2015	13	0	n/a
Hikiyama	Japan	Native	31.732	130.672	EE Seika , R Terada	5/23/2015	19	1	4.5 wp
Mouso Bay	Japan	Native	38.901	141.623	EE Seika , H Endo, J Pocklington	5/25/2015	17	0	4.5 wp
Shioiri	Japan	Native	41.765	140.818	EE Seika , SA Krueger-Hadfield, CR Hadfield	5/30/2015	19	0	4 wp
Obikakotano-Okkoshi Bay Site A	Japan	Native	43.025	144.88	EE Seika , SA Krueger-Hadfield, CR Hadfield	6/2/2015	20	11	4 wp
Futatabi	Japan	Native	44.049	144.258	SA Krueger-Hadfield, CR Hadfield, T Yotsue	6/4/2015	20	0	n/a
Utsu City	Japan	Native	42.515	140.786	SA Krueger-Hadfield, CR Hadfield	6/7/2015	20	0	n/a
Mangokura	Japan	Native	38.418	141.413	SA Krueger-Hadfield, CR Hadfield, H Endo, J Pocklington	5/27/2015	20	0	n/a
Hayase River	Japan	Native	35.615	135.906	SA Krueger-Hadfield, CR Hadfield, M Kurajima , T Ogawa	6/11/2015	20	0	n/a
Soukanzen	Japan	Native	38.353	141.06	SA Krueger-Hadfield, CR Hadfield, H Endo, J Pocklington, EE Seika	5/27/2015	20	18	4 wp
Futsu	Japan	Native	35.322	139.834	SA Krueger-Hadfield, CR Hadfield	6/19/2015	20	7	4 wp
Choshi, Nagasaki-Tyosu	Japan	Native	35.701	140.863	SA Krueger-Hadfield, CR Hadfield	6/17/2015	20	0	n/a
Elliot's Beach, Parris Island	USA	Non-native	32.318	-80.704	SA Krueger-Hadfield, J Holloway, SJ Shinker, KM Benes	7/6/2015	20	10	3 wp
Fort Johnson, Charleston SC	USA	Introduced	32.751	-79.901	SA Krueger-Hadfield, BA Flanagan, A Gaffney, SJ Shinker	7/10/2015	20	10	3 wp
Tybee Cut, Savannah GA	USA	Introduced	31.951	-80.984	SA Krueger-Hadfield, PM Biggs , SJ Shinker, A Gausman	7/9/2015	20	10	3 wp

					c, L Haram, C Kinney				
Point Wilson, Washington	USA	Introduced	47.21	-122.84	EE Solka , T Mumford	7/13/2015	20	10	4 pp
Edo Inlet, Washington	USA	Introduced	47.085	-122.98	EE Solka , T Mumford	7/13/2015	20	10	4 pp
Crab Meadow, NY	USA	Introduced	40.929	-73.327	SA Krueger- Hadfield, A Blakeslee	7/16/2015	20	10	3.5 pp
Lighthouse Point, CT	USA	Introduced	41.249	-72.904	SA Krueger- Hadfield, M Sofie , A Danka	7/16/2015	20	10	3.5 pp
Port Moody, BC, CA	USA	Introduced	49.28	-122.85	EE Solka	7/15/2015	20	9	3.5 pp
Sandy Point, RI	USA	Introduced	41.662	-71.41	SA Krueger- Hadfield, N Colvard	7/17/2015	20	3	3.5 pp
Great Bay, NH	USA	Introduced	43.092	-70.865	SA Krueger- Hadfield, JE Byers	7/18/2015	20	10	3.5 pp
Upper Blauvelt , Wachapreague , VA	USA	Introduced	37.619	-75.67	SA Krueger- Hadfield, BA Flanagan, S Fate	8/2/2015	20	10	3 pp
Castle Ridge Creek, Willis Wharf, VA	USA	Introduced	37.456	-75.819	SA Krueger- Hadfield, BA Flanagan, S Fate	8/3/2015	20	10	3 pp
Hillcrest Oyster Harbor, VA	USA	Introduced	37.284	-75.41	SA Krueger- Hadfield, BA Flanagan, S Fate	8/4/2015	20	10	3 pp
Bodega Bay, CA	USA	Introduced	38.318	-123.06	SA Krueger- Hadfield, N Kollars	8/14/2015	27	16	3 pp
Tonales Bay, CA	USA	Introduced	38.18	-122.91	SA Krueger- Hadfield, N Kollars	8/13/2015	22	14	3 pp
Heikendorf , Kiel	German y	Introduced	54.364	10.1937	SA Krueger- Hadfield, EE Solka , F Weinberger	8/31/2015	17	2	4 pp
Nordstrand	German y	Introduced	54.486	8.81274	SA Krueger- Hadfield, EE Solka , F Weinberger	9/1/2015	20	18	4 pp
Heiligenhafen	German y	Introduced	54.38	10.9832	SA Krueger- Hadfield, EE Solka , F Weinberger	8/31/2015	20	9	4 pp
Morlaix , Dinan	France	Introduced	48.515	-1.9698	SA Krueger- Hadfield, C Destombe	9/9/2015	15	12	4 pp
St Pol de Leon	France	Introduced	48.676	-3.9716	SA Krueger- Hadfield, S Mauger	9/8/2015	15	0	4 pp
Port Ubbé	France	Introduced	47.667	-4.2159	SA Krueger- Hadfield, ML Guillemin, C Destombe , M Valero	9/11/2015	15	11	4 pp
Le Esau	France	Introduced	48.296	-4.1821	SA Krueger- Hadfield, ML Guillemin, C Destombe , M Valero	9/11/2015	15	7	4 pp
Aviro	Portugal	Introduced	40.636	-8.6659	EE Solka	9/29/2015	20	5	3.5 pp

A Coruna, Galicia	Spain	Introduced	43.328	-8.3789	EE Sotka, Lucia Couceiro	9/27/2015	20	12	3.5 pp
Faro	Portugal	Introduced	37.028	-8.0224	EE Sotka, Lucia Couceiro Engelen	10/1/2015	10	6	3.5 pp

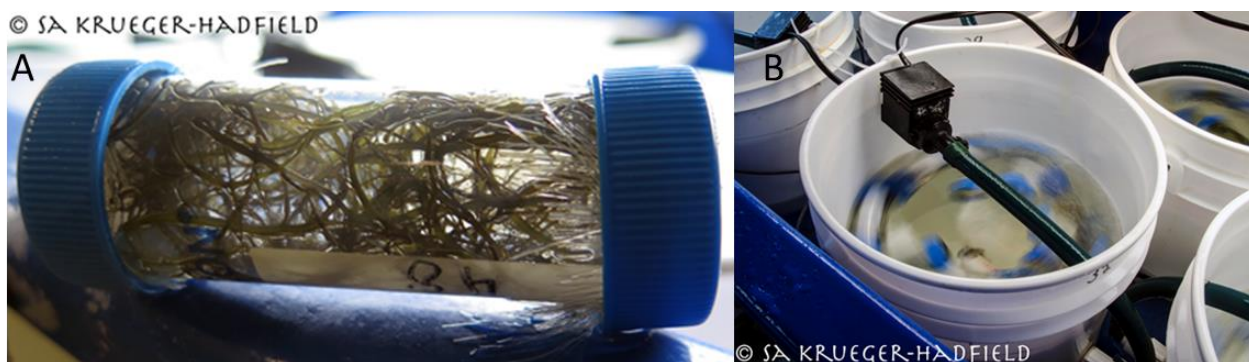


Fig. 2 Common garden setup. A) *Gracilaria vermiculophylla* thalli in “shacks” and B) thalli in buckets, kept in motion by pumps. Photo Credit: SA Krueger-Hadfield.

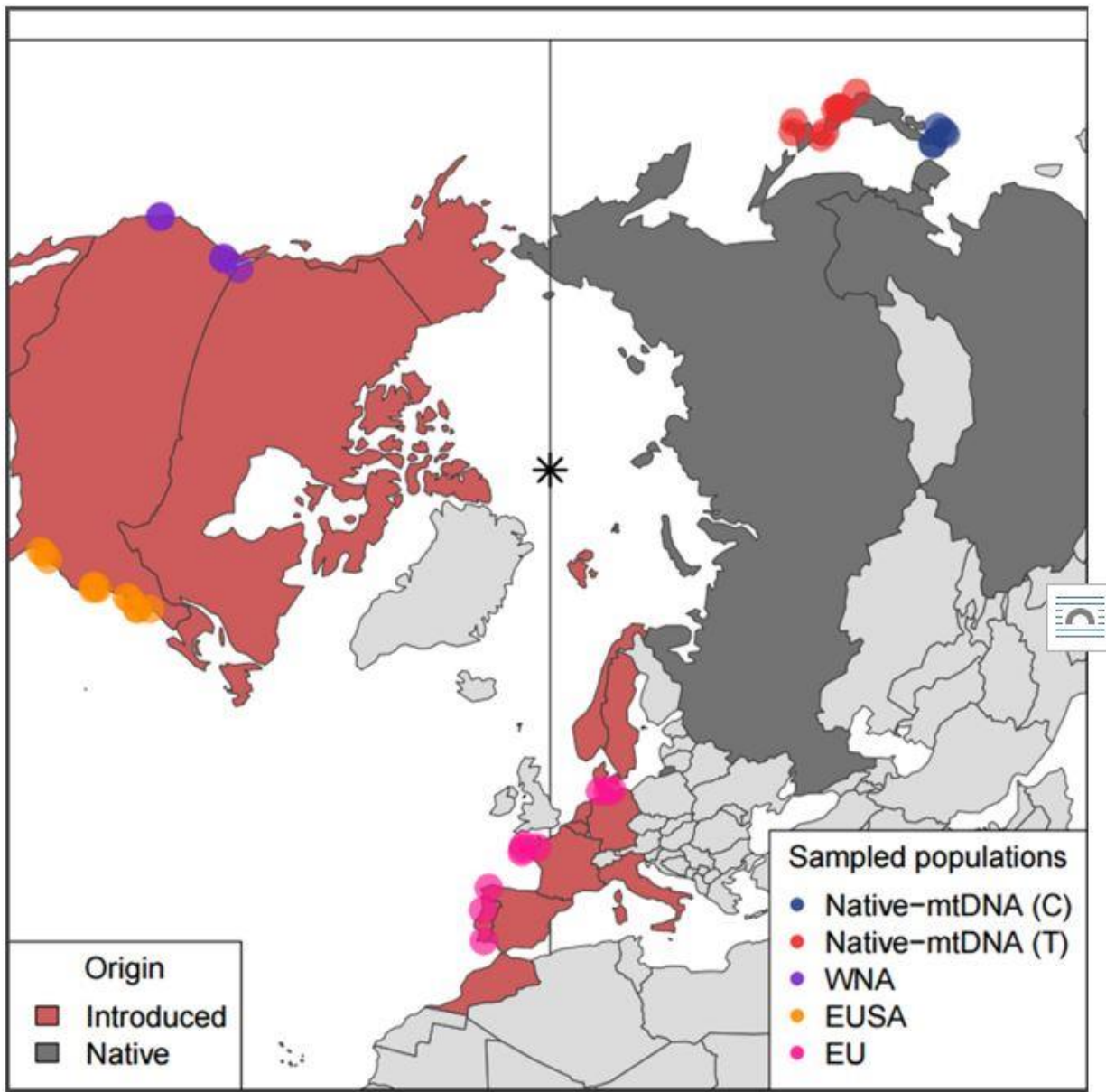


Fig. 3 Sampling locations in Japan, North America, and Europe (polar view). Within the native range, red dots indicate the native source populations, from which the introduction may have spread; blue dots indicate native, non-source populations. Colored dots in the introduced range represent genetic clades.

Proportion Bleached: Field-Collected Cold Assays

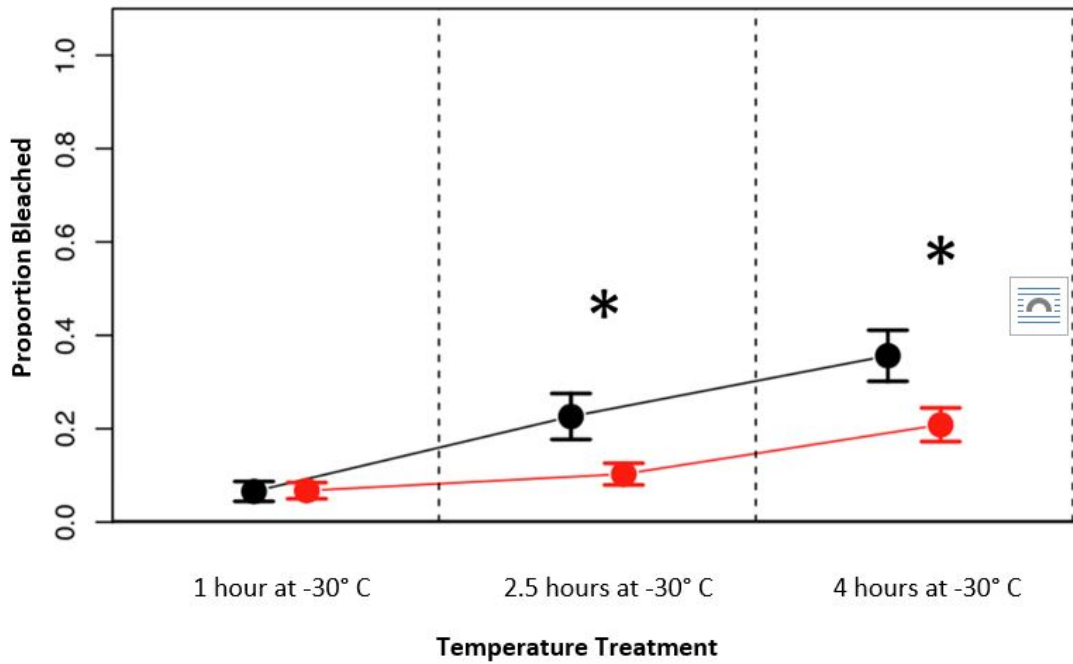


Fig. 4 Proportion of bleached thalli at each cold temperature treatment from field-collected populations (black= native populations, red= introduced populations). 1 hour: P-value=0.783; 2.5 hours: P-value= 0.006; 4 hours: P-value=0.002.

* Indicates significant difference

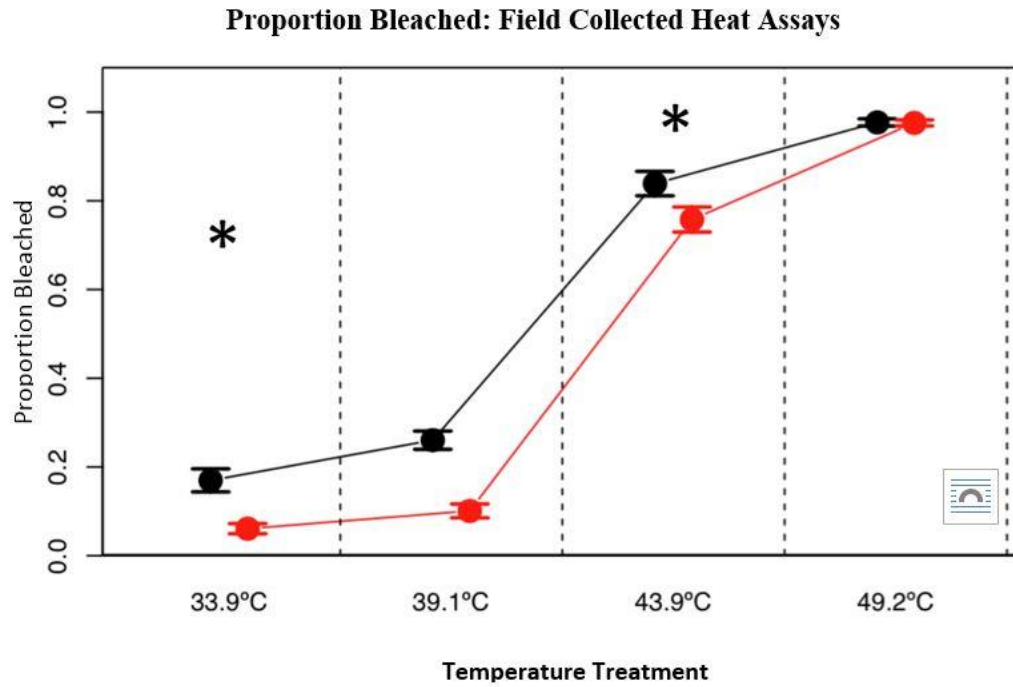


Fig. 5 Proportion of field-collected thalli that bleached in response to high temperatures (black= native populations, red= introduced populations). 33.9° C: P-value=0.001; 39.1° C: P-value=0.407; 43.9° C: P-value=0.010; 49.2° C: P-value= 0.599.

* Indicates significant difference

Proportion Bleached: Common Garden Heat Assays

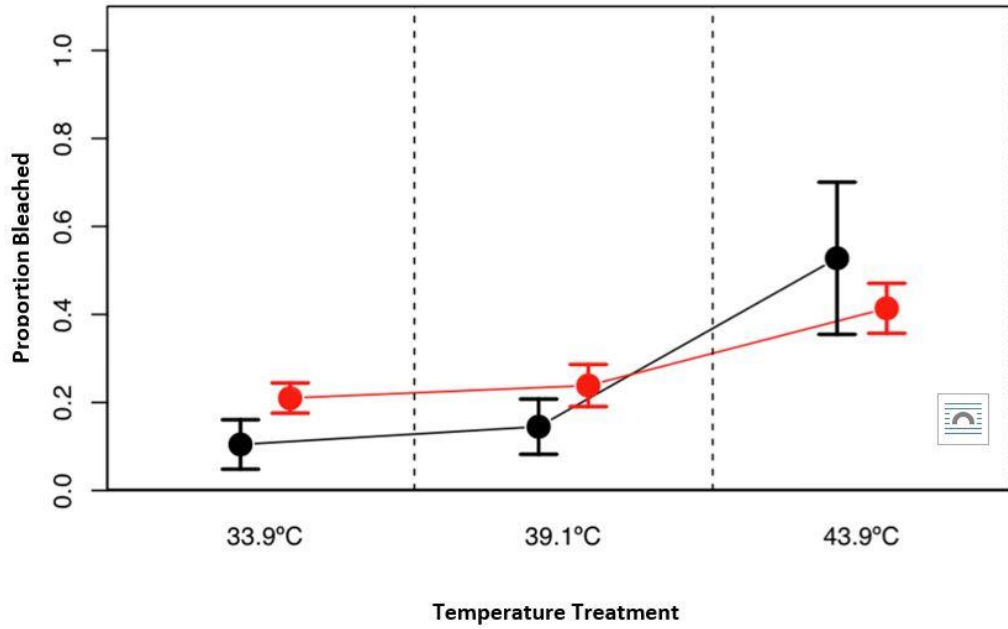


Fig. 6 Proportion of common garden thalli that bleached in response to high temperatures (black = native populations, red = introduced populations). P-value for effect of treatment on native vs. non-native=0.968.