**First record of *Laminaria ochroleuca* Bachelot de la Pylaie in Ireland found in Béal an Mhuirthead, County Mayo.**

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Running title: Expansion of *Laminaria ochroleuca* in Ireland?

Supplemental Table 1.The number of alleles, allele range, null allele frequency, and *TANDEM* ver. 1.09 output (Matschiner & Saltzburger 2009), including the specified repeat size, rounding method, average rounding error and error threshold for each microsatellite locus used to genotype *L. hyperborea* populations. The only locus with a higher rounding error than 10% of the repeat size was locus Gver\_6311, shown in red and bold. All individuals flagged as errors were manually checked to make sure they were manually binned (Krueger-Hadfield *et al.* 2013).

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Locus | Dye | Allele range | Number of alleles | Null allele frequency | Specified repeat size | Rounded to | Average error | Error threshold |
| LoIVVIV-23 (Lo\_23) | VIC | 127-139 | 2 | 0 | 3 | 2/3 | 0.00 | 0.3 |
| LoIVVIV-26 (Lo\_26) | PET | 201 | 1 | 0 | 4 | 1/4 | 0.10 | 0.4 |
| LoIVVIV-17 (Lo\_17) | NED | 195-203 | 3 | 0 | 3 | 1/3 | 0.08 | 0.3 |
| LoIVVIV-7 (Lo\_7) | 6-FAM | 226-241 | 4 | 0 | 3 | 1/3 | 0.26 | 0.3 |
| Lo5-8 (Lo\_58) | VIC | 159-171 | 4 | 0.050 | 3 | 0/3 | 0.10 | 0.3 |
| LoIVVIV-13 (Lo\_13) | PET | 200-209 | 4 | 0.308 | 3 | 2/3 | 0.12 | 0.3 |
| LoIVVIV-16 (Lo\_16) | NED | 222-230 | 2 | 0 | 3 | 1/3 | 0.19 | 0.3 |
| LoIVVIV-27 (Lo\_27) | 6-FAM | 234-242 | 4 | 0 | 4 | 2/4 | 0.12 | 0.4 |
| LoIVVIV-10 (Lo\_10) | VIC | 147-154 | 3 | 0 | 3 | 1/3 | 0.08 | 0.3 |
| LoIVVIV-15 (Lo\_15) | PET | 207-216 | 3 | 0 | 3 | 2/3 | 0.21 | 0.3 |
| LoIVVIV-28 (Lo\_28) | NED | 225-233 | 2 | 0 | 4 | 2/4 | 0.17 | 0.4 |
| LoIVVIV-24 (Lo\_24) | 6-FAM | 342-360 | 3 | 0 | 3 | 0/3 | 0.04 | 0.3 |

Supplemental Table 2.Microsatellite genotypes of 15 *Laminaria ochroleuca* sporophytes from Béal an Mhuirthead. Lo is the same as LoIVVIV.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Ind | Lo23 |  | Lo24 |  | Lo27 |  | Lo7 |  | Lo17 |  | Lo26 |  | Lo28 |  | Lo10 |  | Lo15 |  | Lo16 |  | Lo58 |  | Lo13 |  |
| Loc\_01 | 139 | 139 | 357 | 360 | 242 | 242 | 226 | 235 | 195 | 203 | 201 | 201 | 233 | 233 | 147 | 154 | 213 | 213 | 222 | 222 | 159 | 159 | 209 | 209 |
| Loc\_02 | 139 | 139 | 0 | 0 | 242 | 242 | 232 | 235 | 0 | 0 | 201 | 201 | 225 | 233 | 147 | 147 | 207 | 207 | 230 | 230 | 168 | 168 | 203 | 206 |
| Loc\_03 | 139 | 139 | 0 | 0 | 242 | 242 | 226 | 235 | 198 | 203 | 201 | 201 | 233 | 233 | 0 | 0 | 0 | 0 | 230 | 230 | 165 | 168 | 203 | 203 |
| Loc\_04 | 139 | 139 | 0 | 0 | 242 | 242 | 226 | 235 | 198 | 203 | 201 | 201 | 225 | 233 | 147 | 154 | 207 | 216 | 222 | 230 | 168 | 168 | 203 | 206 |
| Loc\_05 | 139 | 139 | 0 | 0 | 238 | 242 | 226 | 235 | 198 | 203 | 201 | 201 | 233 | 233 | 151 | 154 | 213 | 216 | 222 | 230 | 165 | 168 | 203 | 203 |
| Loc\_06 | 139 | 139 | 357 | 360 | 238 | 242 | 226 | 235 | 198 | 203 | 201 | 201 | 233 | 233 | 147 | 154 | 207 | 216 | 222 | 230 | 165 | 168 | 206 | 206 |
| Loc\_07 | 139 | 139 | 342 | 360 | 242 | 242 | 232 | 241 | 0 | 0 | 201 | 201 | 225 | 233 | 147 | 154 | 207 | 216 | 0 | 0 | 0 | 0 | 209 | 209 |
| Loc\_08 | 139 | 139 | 360 | 360 | 238 | 242 | 235 | 235 | 203 | 203 | 201 | 201 | 233 | 233 | 0 | 0 | 216 | 216 | 222 | 230 | 168 | 168 | 0 | 0 |
| Loc\_09 | 139 | 139 | 360 | 360 | 242 | 242 | 226 | 235 | 198 | 203 | 201 | 201 | 225 | 233 | 147 | 154 | 207 | 216 | 222 | 222 | 168 | 168 | 209 | 209 |
| Loc\_10 | 139 | 139 | 342 | 360 | 242 | 242 | 232 | 235 | 198 | 203 | 201 | 201 | 225 | 233 | 147 | 154 | 207 | 216 | 222 | 230 | 168 | 171 | 209 | 209 |
| Loc\_11 | 127 | 139 | 342 | 360 | 242 | 242 | 226 | 235 | 198 | 198 | 201 | 201 | 225 | 233 | 147 | 147 | 207 | 216 | 222 | 230 | 168 | 171 | 206 | 206 |
| Loc\_12 | 139 | 139 | 0 | 0 | 238 | 242 | 226 | 235 | 198 | 203 | 201 | 201 | 225 | 233 | 147 | 154 | 207 | 216 | 222 | 230 | 168 | 171 | 209 | 209 |
| Loc\_13 | 139 | 139 | 342 | 342 | 238 | 242 | 226 | 235 | 198 | 203 | 201 | 201 | 225 | 233 | 147 | 147 | 207 | 207 | 222 | 230 | 168 | 171 | 209 | 209 |
| Loc\_14 | 139 | 139 | 360 | 360 | 234 | 242 | 226 | 235 | 198 | 198 | 201 | 201 | 225 | 233 | 147 | 154 | 207 | 216 | 222 | 222 | 0 | 0 | 200 | 203 |
| Loc\_15 | 139 | 139 | 342 | 360 | 242 | 242 | 226 | 235 | 198 | 203 | 201 | 201 | 225 | 233 | 147 | 154 | 207 | 216 | 222 | 230 | 165 | 168 | 203 | 206 |

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